CCD-TR618/TR618E/TR718E/TR728E/TR818
CCD-TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E
RMT-708

SERVICE MANUAL

Self Diagnosis
Supported model

Ver 1.0 2000. 12

Handycam
Handycam Vision™
video Hi8
InfoLITHIUM™ L SERIES

B MECHANISM

Photo : CCD-TRV98E

US Model
CCD-TR818/TRV58/TRV68/TRV88/TRV98
Canadian Model
CCD-TR818/TRV58/TRV68/TRV98
AEP Model
UK Model
CCD-TR718E/TR728E/TRV58E/
TRV59E/TRV78E/TRV98E
E Model
CCD-TR618/TR618E/TR818/TRV49/
TRV49E/TRV58/TRV68/TRV78/
TRV78E/TRV88/TRV98/TRV98E
Australian Model
CCD-TR618E/TRV49E/TRV78E/TRV98E
Hong Kong Model
CCD-TR618E/TRV49/TRV49E/TRV78/
TRV78E/TRV98/TRV98E
Tourist Model
CCD-TRV49/TRV49E/TRV78/
TRV78E/TRV98/TRV98E
Chinese Model
CCD-TR618E/TRV49E/TRV98E
Brazilian Model
CCD-TR818/TRV58/TRV98
Argentina Model
CCD-TR818/TRV58
Korea Model
CCD-TRV49/TRV78/TRV98

NTSC model : CCD-TR618/TR818/TRV49/TRV58/
TRV68/TRV78/TRV88/TRV98
PAL model : CCD-TR618E/TR718E/TR728E/TRV49E/
TRV58E/TRV59E/TRV78E/TRV98E

For MECHANISM ADJUSTMENT, refer to the “8mm Video MECHANICAL ADJUSTMENT MANUAL Ⅶ ” (9-973-801-11).

SPECIFICATIONS

Video camera recorder

System

Video recording system
2 rotary heads
Helical scanning FM system

Audio recording system
Rotary heads, FM system

Video signal
CCD-TR618/TR818/TRV49/TRV58/TRV68/TRV78/TRV88/TRV98:
NTSC color, EIA standards
CCD-TR618E/TR718E/TR728E/TRV49E/TRV58E/TRV59E/TRV78E/TRV98E:
PAL colour, CCIR standards

Usable cassette
8mm video format cassette
Hi8 or standard 8

Recording/playback time
CCD-TR618/TR818/TRV49/TRV58/TRV68/TRV78/TRV88/TRV98:
(using 120 min. cassette)
SP mode: 2 hours
LP mode: 4 hours
CCD-TR618E/TR718E/TR728E/TRV49E/TRV58E/TRV59E/TRV78E/TRV98E: **(using 90 min. cassette)**
SP mode: 1 hour and 30 minutes
LP mode: 3 hours

Fastforward/rewind time
CCD-TR618/TR818/TRV49/TRV58/TRV68/TRV78/TRV88/TRV98:
(using 120 min. cassette)
CCD-TR618E/TR718E/TR728E/TRV49E/TRV58E/TRV59E/TRV78E/TRV98E: **(using 90 min. cassette)**
Approx. 5 min.

Viewfinder
Electric viewfinder
CCD-TR818: Color
CCD-TR618/TR618E/TR718E/TR728E/TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E:
Monochrome

Image device
CCD-TR618/TRV49/TRV58:
3 mm (1/6 type) CCD
(Charge Coupled Device)
Approx. 270 000 pixels
(Effective: Approx. 250 000 pixels)
CCD-TR618E/TR718E/TR728E/TRV49E/TRV58E/TRV59E:
3 mm (1/6 type) CCD
(Charge Coupled Device)
Approx. 320 000 pixels
(Effective: Approx. 290 000 pixels)
CCD-TR818/TRV68/TRV78/TRV88/TRV98:
4.5 mm (1/4 type) CCD
(Charge Coupled Device)
Approx. 320 000 pixels
(Effective: Approx. 200 000 pixels)
CCD-TRV78E/TRV98E:
4.5 mm (1/4 type) CCD
(Charge Coupled Device)
Approx. 380 000 pixels
(Effective: Approx. 230 000 pixels)

Lens
Combined power zoom lens
Filter diameter 37 mm (1 7/16 in.)
CCD-TR618/TR618E/TRV49/TRV49E:
20× (Optical), 450× (Digital)
CCD-TR718E/TR818/TRV58/TRV58E/TRV68:
20× (Optical), 460× (Digital)
CCD-TR728E/TRV59E/TRV78/TRV78E/TRV88/TRV98/TRV98E:
20× (Optical), 560× (Digital)

Focal length
3.6 - 72 mm (5/32 - 2 7/8 in.)
When converted to a 35 mm still camera
CCD-TR618/TR618E/TR718E/TR728E/TRV49/TRV49E/TRV58/TRV58E/TRV59E:
51.8 - 1 036 mm (2 - 40 6/8 in.)
CCD-TR818/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E:
41 - 820 mm (1 5/8 - 32 3/8 in.)

Colour temperature
Auto

Minimum illumination
CCD-TR618/TR618E/TR718E/TR728E/TRV49/TRV49E/TRV58/TRV58E/TRV59E:
1 lx (lux) (F 1.4)
CCD-TR818/TRV68/TRV78/TRV88/TRV98:
0.4 lx (lux) (F 1.4)
CCD-TRV78E/TRV98E:
0.3 lx (lux) (F 1.4)
0 lx (lux) (in the NightShot mode)*
* Objects unable to be seen due to the dark can be shot with infrared lighting.

Output connectors

S video output
4-pin mini DIN
Luminance signal: 1 Vp-p,
75 Ω (ohms), unbalanced
Chrominance signal:
CCD-TR618/TR818/TRV49/TRV58/TRV68/TRV78/TRV88/TRV98:
0.286 Vp-p,
CCD-TR618E/TR718E/TR728E/TRV49E/TRV58E/TRV59E/TRV78E/TRV98E:
0.3 Vp-p,
75 Ω (ohms), unbalanced

Audio/Video output
AV MINIJACK, 1 Vp-p,
75 Ω (ohms), unbalanced, sync negative
327 mV,
(at output impedance more than 47 kΩ (kilohms))
Output impedance with less than 2.2 kΩ (kilohms)/Monaural minijack (ø 3.5 mm)

RFU DC OUT
Mini-mini jack (ø 2.5 mm), DC 5V

Earphone jack
CCD-TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E:
Monaural minijack (ø 3.5 mm)

— Continued on next page —

Hi8 VIDEO CAMERA RECORDER

SONY®

LCD screen

Picture
CCD-TRV49/TRV49E/TRV58/
TRV58E/TRV59E/TRV68/TRV78/
TRV78E:
6.2 cm (2.5 type)
50.3 × 37.4 mm. (2 × 11/2 in.)
CCD-TRV88:
7.5 cm (3.0 type)
61.0 × 43.8 mm (2 1/2 × 1 3/4 in.)
CCD-TRV98/TRV98E:
8.8 cm (3.5 type)
72.2 × 50.4 mm (2 7/8 × 2 in.)
Total dot number
CCD-TRV49/TRV49E/TRV58/
TRV58E/TRV59E/TRV68/TRV78/
TRV78E:
61 600 (280 × 220)
CCD-TRV88/TRV98/TRV98E:
123 200 (560 × 220)

General

Power requirements
7.2 V (battery pack)
8.4 V (AC power adaptor)
Average power consumption (when using the battery pack)
During camera recording
CCD-TR618/TR618E/TR718E/
TR728E: 2.3 W
CCD-TR818: 2.0 W
During camera recording using LCD
CCD-TRV49/TRV49E/TRV58/
TRV58E/TRV59E/TRV68/TRV78/
TRV78E: 2.7 W
CCD-TRV88/TRV98/TRV98E: 3.4 W
Viewfinder
2.3 W
Operating temperature
0 °C to 40 °C (32 °F to 104 °F)
Recommended charging temperature
10 °C to 30 °C (50 °F to 86 °F)
Storage temperature
–20 °C to +60 °C (–4 °F to +140 °F)
Dimensions (approx.)
CCD-TR618/TR618E/TR718E/
TR728E:
104 × 105 × 223 mm
(4 1/8 × 4 1/4 × 9 1/8 in.)
(w/h/d)
CCD-TR818:
104 × 105 × 197 mm
(4 1/8 × 4 1/4 × 7 7/8 in.)
(w/h/d)
CCD-TRV49/TRV49E/TRV58/
TRV58E/TRV59E/TRV68/TRV78/
TRV78E/TRV88/TRV98/TRV98E:
104 × 109 × 223 mm
(4 1/8 × 4 3/8 × 9 1/8 in.)
(w/h/d)
Mass (approx.)
CCD-TR618/TR618E/TR718E/
TR728E:
780 g (1 lb 11 oz)
CCD-TR818:
760 g (1 lb 10 oz)
CCD-TRV49/TRV49E/TRV58/
TRV58E/TRV59E/TRV68/TRV78/
TRV78E:
910 g (2 lb)
CCD-TRV88:
920 g (2 lb)
CCD-TRV98/TRV98E:
930 g (2 lb)
excluding the battery pack, cassette and shoulder strap
CCD-TR618/TR618E/TR718E/
TR728E:
930 g (2 lb)
CCD-TR818:
910 g (2 lb)
CCD-TRV49/TRV49E/TRV58/
TRV58E/TRV59E/TRV68/TRV78/
TRV78E/TRV88/TRV98/TRV98E:
1.1 kg (2 lb 7 oz)
including the battery pack NP-F330, cassette and shoulder strap
Supplied accessories
See page 3.

AC power adaptor

Power requirements
100 - 240 V AC, 50/60 Hz
Power consumption
23 W
Output voltage
DC OUT: 8.4 V, 1.5 A in operating mode
Operating temperature
0 °C to 40 °C (32 °F to 104 °F)
Storage temperature
–20 °C to +60 °C (–4 °F to +140 °F)
Dimensions (approx.)
125 × 39 × 62 mm
(5 × 1 9/16 × 2 1/2 in.) (w/h/d)
excluding projecting parts
Mass (approx.)
280 g (9.8 oz)
excluding power cord

Battery pack

Maximum output voltage
DC 8.4 V
Output voltage
DC 7.2 V
Capacity
5.0 Wh (700mAh)
Dimensions (approx.)
38.4 × 20.6 × 70.8 mm
(1 9/16 × 13/16 × 2 7/8 in.)
(w/h/d)
Mass (approx.)
70 g (2.5 oz)
Operating temperature
0 °C to 40 °C (32 °F to 104 °F)
Type
Lithium ion

Design and specifications are subject to change without notice.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT
À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈSES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPÉMENTS PUBLIÉS PAR SONY.

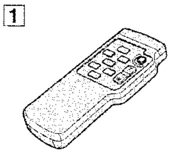
SAFETY CHECK-OUT

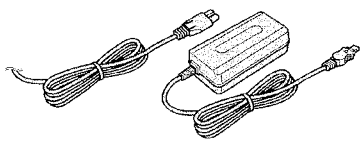
After correcting the original service problem, perform the following safety checks before releasing the set to the customer.

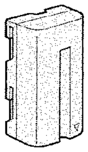
1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, through functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.
6. Flexible Circuit Board Repairing
   - Keep the temperature of the soldering iron around 270˚C during repairing.
   - Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
   - Be careful not to apply force on the conductor when soldering or unsoldering.

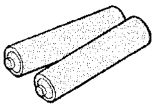
• SUPPLIED ACCESSORIES

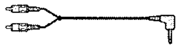
Check that the following accessories are supplied with your camcorder.

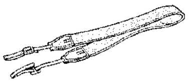
1


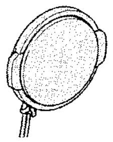
2


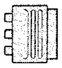
3


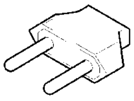
4


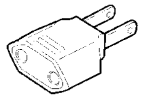
5


6


7


8


9


10


1 **Wireless Remote Commander** (1)
CCD-TR728E/TRV49/TRV49E/TRV59E/TRV78/TRV78E/TRV98/TRV98E only

2 **AC-L10A/L10B/L10C AC power adaptor** (1), **Mains lead** (1)

3 **NP-F330 battery pack** (1)

4 **R6 (size AA) battery for Remote Commander** (2)
CCD-TR728E/TRV49/TRV49E/TRV59E/TRV78/TRV78E/TRV98/TRV98E only

5 **A/V connecting cable** (1)

6 **Shoulder strap** (1)

7 **Lens cap** (1)

8 **21-pin adaptor** (1)
CCD-TR718E/TR728E/TRV58E/TRV59E/TRV78E/TRV98E (European models only)

9 **2-pin convesion adaptor** (1)
CCD-TRV49: JE/TRV49E: JE/TRV78: JE/TRV78E: JE/TRV98: JE/TRV98E: JE

10 **2-pin convesion adaptor** (1)
CCD-TR618/TR618E: E,HK/TR818: E,BR/TRV49: E,HK/TRV49E: E,HK/TRV58: E,BR/TRV68: E/TRV78: E,HK/TRV78E: E,HK/TRV88: E/TRV98: E,HK,BR/TRV98E: E,HK

- Abbreviation
  HK : Hong Kong model
  JE : Tourist model
  BR : Brazilian model

Table for difference of function

Model		CCD-TR618	CCD-TR618E	CCD-TR718E	CCD-TR728E	CCD-TR818	CCD-TRV49	CCD-TRV49E	CCD-TRV58	CCD-TRV58E	CCD-TRV59E	CCD-TRV68	CCD-TRV78	CCD-TRV78E	CCD-TRV88	CCD-TRV98	CCD-TRV98E	Remark
Destination		E	E,HK,AUS,CN	AEP,UK	AEP,UK	US,CND,E,BR,AR	E,HK,KR,JE	E,HK,AUS,JE,CN	US,CND,E,BR,AR	AEP,UK	AEP,UK	US,CND,E	E,HK,KR,JE	AEP,UK,E,HK,AUS,JE	US,E	US,CND,E,HK,KR,JE,BR	AEP,UK,E,HK,AUS,JE,CN	
Color system		NTSC	PAL			NTSC		PAL	NTSC	PAL		NTSC		PAL	NTSC		PAL	
Remote commander		××			RMT-708	××	RMT-708		××		RMT-708	××	RMT-708		XX	RMT-708		
Lens	Optical	20×																
	Digital	450×		460×	560×	460×	450×		460×		560×	460×	560×					
CCD imager size		1/6 inch				1/4 inch	1/6 inch					1/4 inch						
LCD	size	××					2.5 inch								3 inch	3.5 inch		
	pixel	××					61K								123K			
View finder		B/W				Color	B/W											
Steady shot		××				○	××					○						
Headphone jack		××					○											
LASER LINK		××														○	××	
Video Light		○				××	○											
Board	CD-	CD-286					CD-281											
	CF-	CF-077					CF-1000 block											
	VF-	VF-129				VF-141	VF-129											VF-129 : B/W EVF VF-141 : Color EVF
	PD-	××					PD-131											
	MI-	MI-040					MI-041											
	LB-	××				LB-062	××											LB-062 : Color EVF

- Abbreviation

CND : Canadian model
HK : Hong Kong model
KR : Korea model
JE : Tourist model
AUS : Australian model
CN : Chinese model
BR : Brazilian model
AR : Argentina model

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* Color reproduction frame is shown on page 239.

SERVICE NOTE

1. POWER SUPPLY DURING REPAIRS

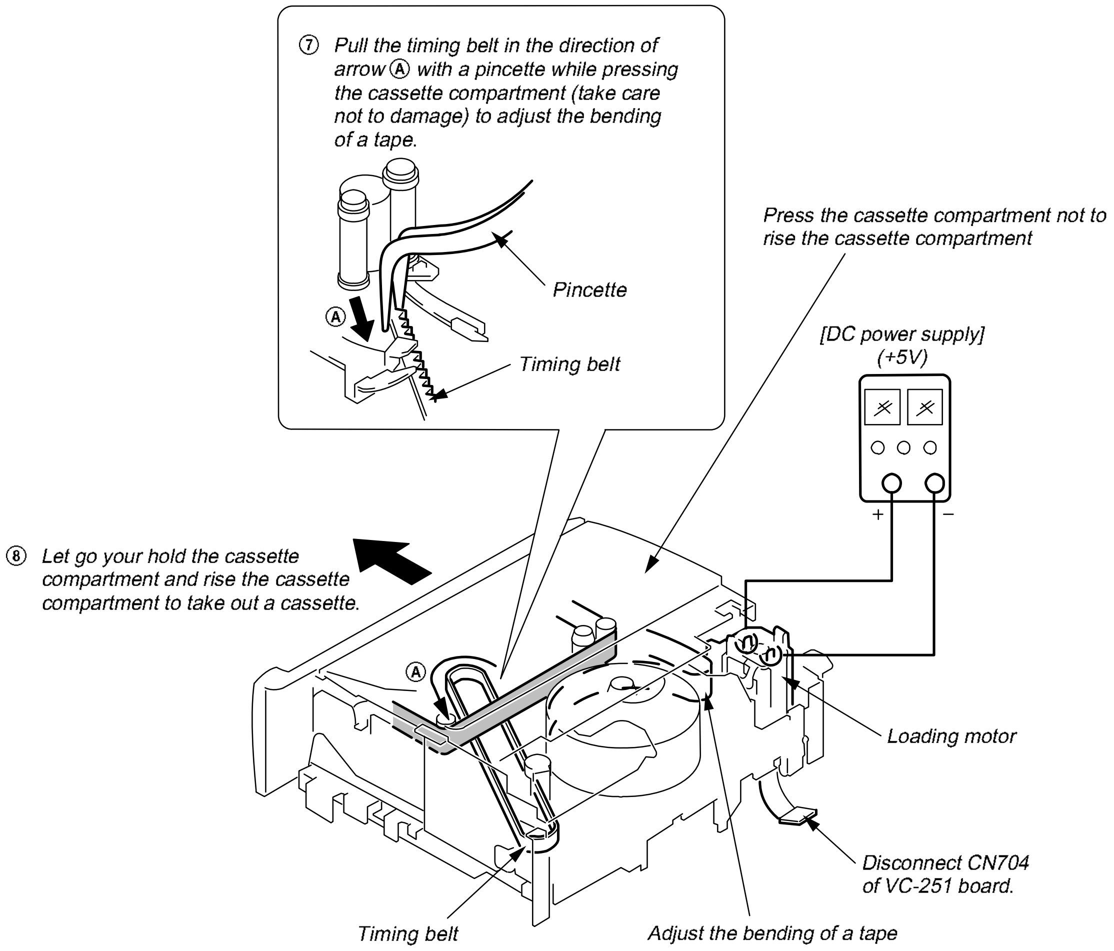
In this unit, about 10 seconds after power is supplied (8.4V) to the battery terminal using the service power cord (J-6082-223-A), the power is shut off so that the unit cannot operate.
This following method is available to prevent this.

Method:

Use the DC IN terminal. (Use the AC power adaptor.)

2. TO TAKE OUT A CASSETTE WHEN NOT EJECT (FORCE EJECT)

① Refer to 2-3. to remove the front panel assembly.
② Refer to 2-5 (TR model). or 2-6 (TRV model). to remove the cabinet (R) assembly.
③ Open the control switch block (FK-1000).
④ Refer to 2-4. to remove the cabinet (L) assembly.
⑤ Disconnect CN704 (8P) of VC-251 board.
⑥ Add +5V from the DC POWER SUPPLY and unload with a pressing the cassette compartment.



⑦ Pull the timing belt in the direction of arrow Ⓐ with a pincette while pressing the cassette compartment (take care not to damage) to adjust the bending of a tape.

⑧ Let go your hold the cassette compartment and rise the cassette compartment to take out a cassette.

Press the cassette compartment not to rise the cassette compartment

Ⓐ
Pincette
Timing belt
[DC power supply]
(+5V)
+
−
Ⓐ
Loading motor
Disconnect CN704 of VC-251 board.
Timing belt
Adjust the bending of a tape

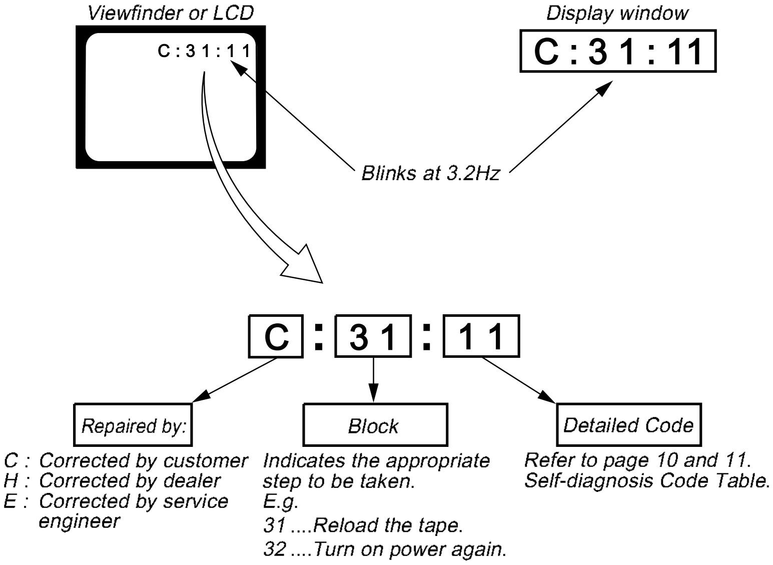
SELF-DIAGNOSIS FUNCTION

1. Self-diagnosis Function

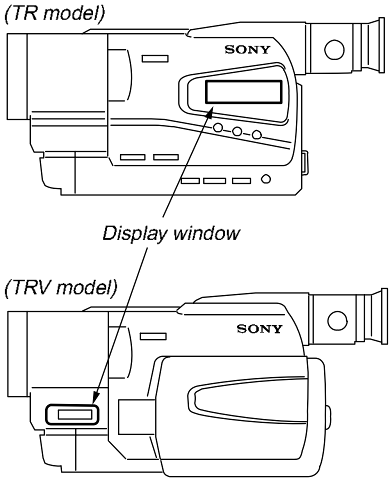
When problems occur while the unit is operating, the self-diagnosis function starts working, and displays on the viewfinder or LCD or Display window what to do. This function consists of two display; self-diagnosis display and service mode display.
Details of the self-diagnosis functions are provided in the Instruction manual.

2. Self-diagnosis Display

When problems occur while the unit is operating, the counter of the viewfinder or LCD or Display window shows a 4-digit display consisting of an alphabet and numbers, which blinks at 3.2 Hz. This 5-character display indicates the "repaired by:", "block" in which the problem occurred, and "detailed code" of the problem.



Viewfinder or LCD
C : 3 1 : 1 1
Display window
C : 3 1 : 11
Blinks at 3.2Hz
C : 3 1 : 1 1
Repaired by:
Block
Detailed Code
C : Corrected by customer
H : Corrected by dealer
E : Corrected by service engineer
Indicates the appropriate step to be taken.
E.g.
31 ....Reload the tape.
32 ....Turn on power again.
Refer to page 10 and 11.
Self-diagnosis Code Table.



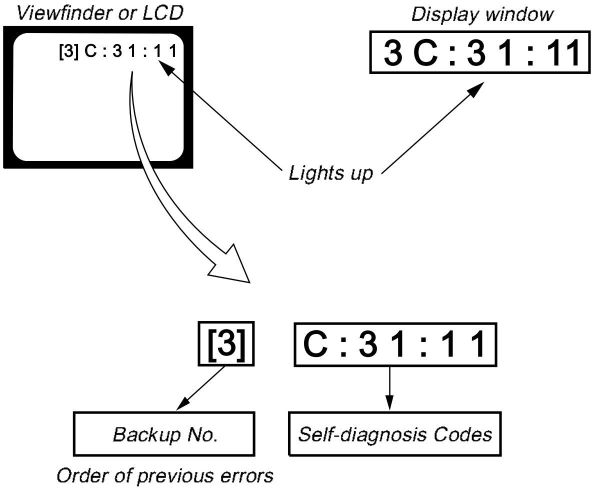
(TR model)
SONY
Display window
(TRV model)
SONY

3. Service Mode Display

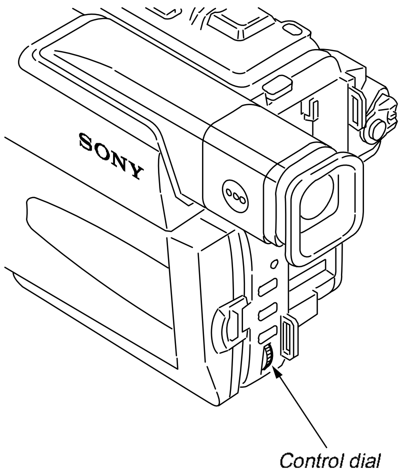
The service mode display shows up to six self-diagnosis codes shown in the past.

3-1. Display Method

While pressing the "STOP" key, set the switch from OFF to "VTR or PLAYER", and continue pressing the "STOP" key for 5 seconds continuously. The service mode will be displayed, and the counter will show the backup No. and the 5-character self-diagnosis codes.



Viewfinder or LCD
[3] C : 3 1 : 1 1
Display window
3 C : 3 1 : 11
Lights up
[3]
C : 3 1 : 1 1
Backup No.
Self-diagnosis Codes
Order of previous errors



SONY
Control dial

3-2. Switching of Backup No.

By rotating the control dial, past self-diagnosis codes will be shown in order. The backup No. in the [] indicates the order in which the problem occurred. (If the number of problems which occurred is less than 6, only the number of problems which occurred will be shown.)

[1] : Occurred first time
[2] : Occurred second time
[3] : Occurred third time
[4] : Occurred fourth time
[5] : Occurred fifth time
[6] : Occurred the last time

3-3. End of Display

Turning OFF the power supply will end the service mode display.

Note: The "self-diagnosis display" data will be backed up by the built-in rechargeable lithium battery (CF-1000 block/CF-077 board BT101). When the cabinet (R) assembly is disconnected, the "self-diagnosis display" data will be lost by initialization.

4. Self-diagnosis Code Table

Self-diagnosis Code					Symptom/State	Correction
Repaired by:	Block Function		Detailed Code			
C	0	4	0	0	Non-standard battery is used.	Use the InfoLITHIUM battery.
C	2	1	0	0	Condensation.	Remove the cassette, and insert it again after one hour.
C	2	2	0	0	Video head is dirty.	Clean with the optional cleaning cassette.
C	3	1	1	0	LOAD direction. Loading does not complete within specified time	Load the tape again, and perform operations from the beginning.
C	3	1	1	1	UNLOAD direction. Loading does not complete within specified time	Load the tape again, and perform operations from the beginning.
C	3	1	2	0	T reel side tape slacking when unloading.	Load the tape again, and perform operations from the beginning.
C	3	1	2	1	S reel side tape slacking when unloading.	Load the tape again, and perform operations from the beginning.
C	3	1	2	2	T reel fault.	Load the tape again, and perform operations from the beginning.
C	3	1	2	3	S reel fault.	Load the tape again, and perform operations from the beginning.
C	3	1	3	0	FG fault when starting capstan.	Load the tape again, and perform operations from the beginning.
C	3	1	3	1	FG fault during normal capstan operations.	Load the tape again, and perform operations from the beginning.
C	3	1	4	0	FG fault when starting drum.	Load the tape again, and perform operations from the beginning.
C	3	1	4	1	PG fault when starting drum.	Load the tape again, and perform operations from the beginning.
C	3	1	4	2	FG fault during normal drum operations.	Load the tape again, and perform operations from the beginning.
C	3	1	4	3	PG fault during normal drum operations.	Load the tape again, and perform operations from the beginning.
C	3	1	4	4	Phase fault during normal drum operations.	Load the tape again, and perform operations from the beginning.
C	3	2	1	0	LOAD direction loading motor time-out.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	1	1	UNLOAD direction loading motor time-out.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	2	0	T reel side tape slacking when unloading.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	2	1	S reel side tape slacking when unloading.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	2	2	T reel fault.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	2	3	S reel fault.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	3	0	FG fault when starting capstan.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	3	1	FG fault during normal capstan operations.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	4	0	FG fault when starting drum.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	4	1	PG fault when starting drum.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	4	2	FG fault during normal drum operations.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	4	3	PG fault during normal drum operations.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	4	4	Phase fault during normal drum operations.	Remove the battery or power cable, connect, and perform operations from the beginning.

Self-diagnosis Code			Symptom/State	Correction
Repaired by:	Block Function	Detailed Code		
E	6 1	0 0	Difficult to adjust focus (Cannot initialize focus.)	Inspect the lens block focus reset sensor (Pin ⑫ of CN301 of VC-251 board) when focusing is performed when the control dial is rotated in the focus manual mode and the focus motor drive circuit (IC301 of VC-251 board) when the focusing is not performed.
E	6 1	1 0	Zoom operations fault (Cannot initialize zoom lens.)	Inspect the lens block zoom reset sensor (Pin ⑭ of CN301 of VC-251 board) when zooming is performed when the zoom lens is operated and the zoom motor drive circuit (IC301 of VC-251 board) when zooming is not performed.
E	6 2	0 0	Handshake correction function does not work well. (With pitch angular velocity sensor output stopped.)	Inspect pitch angular velocity sensor (SE751 of MI-040/041 board) peripheral circuits. *1
E	6 2	0 1	Handshake correction function does not work well. (With yaw angular velocity sensor output stopped.)	Inspect yaw angular velocity sensor (SE752 of MI-040/041 board) peripheral circuits. *1

*1: STEADY SHOT model (CCD-TR818/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)

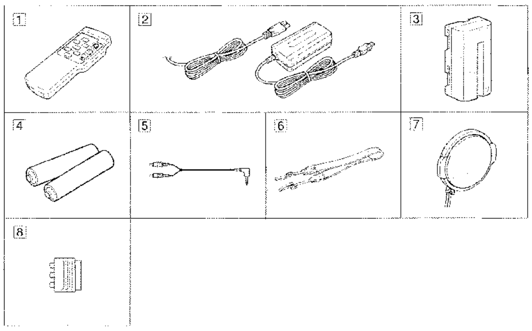
CCD-TR618/TR618E/TR718E/TR728E/TR818/TRV49/TRV49E/TRV58/ TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E

SECTION 1
GENERAL

This section is extracted from instruction manual. (CCD-TRV49E/TRV58E/TRV59E/ TRV78E/TRV98E model)

Checking supplied accessories

Make sure that the following accessories are supplied with your camcorder.



1 **Wireless Remote Commander** (1) (p. 116)
CCD-TRV49E/TRV59E/TRV78E/TRV98E only

2 **AC-L10A/L10B/L10C AC power adaptor** (1), **Mains lead** (1) (p. 15)

3 **NP-F330 battery pack** (1) (p. 14, 15)

4 **R6 (size AA) battery for Remote Commander** (2) (p. 116)
CCD-TRV49E/TRV59E/TRV78E/TRV98E only

5 **A/V connecting cable** (1) (p. 42)

6 **Shoulder strap** (1) (p. 112)

7 **Lens cap** (1) (p. 26, 113)

8 **21-pin adaptor** (1) (p. 43)
CCD-TRV58E/TRV59E/TRV78E/TRV98E (European models only)

Contents of the recording cannot be compensated if recording or playback is not made due to a malfunction of the camcorder, storage media, etc.

Проверка прилагаемых принадлежностей

Убедитесь, что следующие принадлежности прилагаются к Вашей видеокамере.

1 **Беспроводный пульт дистанционного управления** (1) (стр. 116)
Только модели CCD-TRV49E/TRV59E/TRV78E/TRV98E

2 **Сетевой адаптер переменного тока AC-L10A/L10B/L10C** (1), **Провод электропитания** (1) (стр. 15)

3 **Батарейный блок NP-F330** (1) (стр. 14,15)

4 **Батарейка R6 (размера AA) для пульта дистанционного управления** (2) (стр. 116)
Только модели CCD-TRV49E/TRV59E/TRV78E/TRV98E

5 **Соединительный кабель аудио/видео** (1) (стр. 42)

6 **Плечевой ремень** (1) (стр. 112)

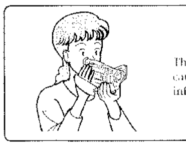
7 **Колпачок объектива** (1) (стр. 26, 113)

8 **21-штырьковый адаптер** (1) (стр. 43)
CCD-TRV58E/TRV59E/TRV78E/TRV98E
(Только европейские модели)

Содержание записи не может быть компенсировано в случае, если запись или воспроизведение не выполнены из-за неисправности видеокамеры, носителя записи и т.п.

English

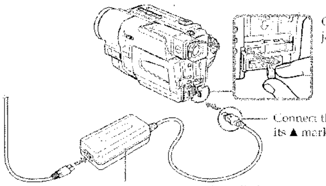
Quick Start Guide



This chapter introduces you to the basic features of your camcorder. See the page in parentheses "( )" for more information.

1 Connecting the mains lead (p. 20)

Use the battery pack when using your camcorder outdoors (p. 14).



Open the DC IN jack cover.

Connect the plug with its ▲ mark facing up.

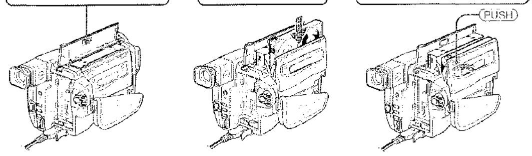
AC power adaptor (supplied)

2 Inserting a cassette (p. 24)

❶ Open the lid of the cassette compartment, and press EJECT. The compartment opens automatically.

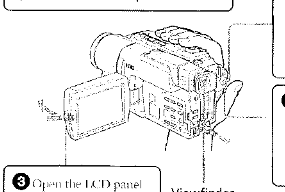
❷ Insert a cassette into the cassette compartment with its window facing out and the write-protect tab on the cassette up.

❸ Close the cassette compartment by pressing the PUSH mark on the cassette compartment. The cassette compartment automatically goes down.
Close the lid of the cassette compartment.

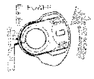


3 Recording a picture (p. 26)

❶ Remove the lens cap.



❷ Set the POWER switch to CAMERA while pressing the small green button.



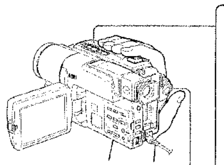
❹ Press the red button. Your camcorder starts recording. To stop recording, press the red button again.

❸ Open the LCD panel while pressing OPEN. The picture appears on the LCD screen.

Viewfinder
When the LCD panel is closed, use the viewfinder placing your eye against its eyecup.
The picture in the viewfinder is black and white.

When you purchase your camcorder, the clock setting is set to off. If you want to record the date and time for a picture, set the clock setting before recording (p. 22)

4 Monitoring the playback picture on the LCD screen (p. 38)



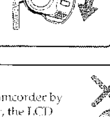
❷ Press ◀◀ to rewind the tape.

REW
◀◀

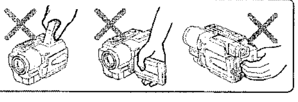
❸ Press ▶ to start playback.

PLAY
▷

❶ Set the POWER switch to PLAYER while pressing the small green button.



NOTE
Do not pick up your camcorder by holding the viewfinder, the LCD panel or the battery pack.



— Getting started —

Using this manual

The instructions in this manual are for the five models listed in the table below. Before you start reading this manual and operating your camcorder, check the model number by looking at the bottom of your camcorder. The CCD-TRV98E is the model used for illustration purposes. Otherwise, the model name is indicated in the illustrations. Any differences in operation are clearly indicated in the text, for example, "CCD-TRV98E only."
As you read through this manual, buttons and settings on your camcorder are shown in capital letters.
e.g. Set the POWER switch to CAMERA.
When you carry out an operation, you can hear a beep sound to indicate that the operation is being carried out.

— Подготовка к эксплуатации —

Использование данного руководства

Инструкции в данном руководстве относится к четырем моделям, перечисленным в таблице на следующей странице. Прежде, чем приступить к ознакомлению с данным руководством и эксплуатации Вашей видеокамеры, проверьте номер модели с нижней стороны видеокамеры. Для иллюстративных целей используется модель CCD-TRV98E. В противном случае название модели указывается на рисунках. Всякие отличия в работе четко указываются в тексте, например. "только модель CCD-TRV98E".
При чтении данного руководства учитывайте, что кнопки и установки на видеокамере показаны заглавными буквами.
Прим. Установите выключатель POWER в положение CAMERA.
При выполнении операции на видеокамере Вы сможете услышать зуммерный сигнал, подтверждающий выполнение операции.

Types of differences/Типы отлиуий

CCD-	TRV49E	TRV58E	TRV59E	TRV78E	TRV98E
Digital zoom/ Цифровой вариообъектив	450×	460×	560×	560×	560×
Remote sensor/ Дистанционный датчик	●	—	●	●	●
SteadyShot/ Дистанционный датчик	—	—	—	●	●

● Provided/Прилагается
— Not provided/Не прилагается

Note on TV colour systems

TV colour systems differ from country to country. To view your recordings on a TV, you need a PAL system-based TV.

Примечание по системам цветного телевидения

Системы цветного телевидения отличаются в зависимости от страны. Для просмотра Ваших записей на экране телевизора Вам необходимо использовать телевизор, основанный на системе PAL.

Using this manual

Precautions on camcorder care

Lens and LCD screen/finder (on mounted models only)

- **The LCD screen and the finder are manufactured using extremely high-precision technology so over 99.99% of the pixels are operational for effective use. However, there may be some tiny black points and/or bright points (white, red, blue or green in colour) that constantly appear on the LCD screen and the finder. These points are normal in the manufacturing process and do not affect the recording in any way.**
- Do not let your camcorder get wet. Keep your camcorder away from rain and sea water. Letting your camcorder get wet may cause your camcorder to malfunction. Sometimes this malfunction cannot be repaired **[a]**.
- Never leave your camcorder exposed to temperatures above 60°C (140°F), such as in a car parked in the sun or under direct sunlight **[b]**.
- Be careful when placing the camera near a window or outdoors. Exposing the LCD screen, the finder or the lens to direct sunlight for long periods may cause malfunctions **[c]**.
- Do not directly shoot the sun. Doing so might cause your camcorder to malfunction. Take pictures of the sun in low light conditions such as dusk **[d]**.

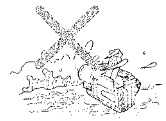
Использование данного руководства

Меры предосторожности при уходе за видеокамерой

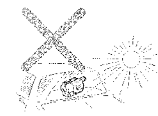
Объектив и экран ЖКД/видоискатель (тоиько на определенных моделях)

- **Экран ЖКД и искатель изготовлены с помощью чрезвычайно высокопрецизионной технологии таким образом, что свыше 99.99% пикселей предназначено для эффективного использования. Однако, на экране ЖКД и искателя могут постоянно появляться мелкие черные и/или яркие точки (белого, красного, синего или зеленого цвета). Появление этих точек вполне нормально для процесса съемки и никоим образом не влияет на записываемое изображение.**
- Не допускайте, чтобы видеокамера становилась влажной. Предохраняйте видеокамеру от дождя и морской воды. Если Вы намочите видеокамеру, то это может привести к неисправности аппарата, которая не всегда может быть устранена **[a]**.
- Никогда не оставляйте видеокамеру в месте с температурой выше 60°C (140°F), как, например, в автомобиле, оставленном на солнце или под прямым солнечным светом **[b]**.
- Помещая фотоаппарат вблизи окна или на открытом воздухе, соблюдайте осторожность. Попадание на экран ЖКД, искатель или объектив прямого солнечного света в течение длительного времени может быть причиной неисправностей. **[c]**.
- Не выполняйте съемку солнца непосредственно. Это может привести к неисправности Вашей видеокамеры. Выполняйте съемку изображений солнца в условиях слабой освещенности, как например, в сумерках **[d]**.

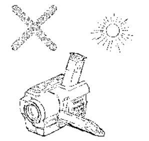
[a]



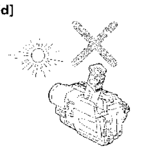
[b]



[c]



[d]



Step 1 Preparing the power supply

Installing the battery pack

Install the battery pack to use your camcorder outdoors.

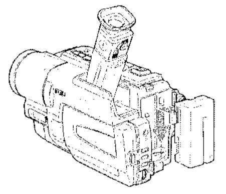
Slide the battery pack down until it clicks.

Пункт 1 Подготовка источника питания

Установка батарейного блока

Установите батарейный блок для того, чтобы использовать Вашу видеокамеру вне помещения.

Передвиньте батарейный блок вниз, чтобы он защелкнулся на месте.

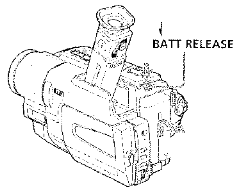


To remove the battery pack

Slide the battery pack out in the direction of the arrow while pressing ↓ BATT RELEASE down.

Для снятия батарейного блока

Передвиньте батарейный блок в направлении стрелки, нажав кнопку ↓ BATT RELEASE вниз.



Step 1 Preparing the power supply

Charging the battery pack

Use the battery pack after charging it for your camcorder.
Your camcorder operates only with the "InfoLITHIUM" battery pack (L series).
See page 95 for more information about "InfoLITHIUM" battery pack.

(1) Open the DC IN jack cover and connect the AC power adaptor supplied with your camcorder to the DC IN jack with the plug's ▲ mark facing up.
(2) Connect the mains lead to the AC power adaptor.
(3) Connect the mains lead to the mains.
(4) Set the POWER switch to OFF (CHARGE). Charging begins, and the CHG lamp is lit.

When the CHG lamp goes out, the charging is completed.

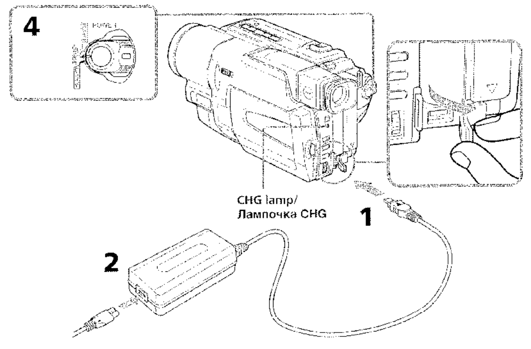
Пункт 1 Подготовка источника питания

Зарядка батарейного блока

Используйте батарейный блок для Вашей видеокамеры после его зарядки.
Ваша видеокамера работает только с батарейным блоком "InfoLITHIUM" (серии L).
Более подробные сведения о батарейном блоке "InfoLITHIUM" приведены на стр. 95.

(1) Откройте крышку гнезда DC IN и подсоедините сетевой адаптер переменного тока, прилагаемый к Вашей видеокамере, к гнезду DC IN, так чтобы штекер ▲ был направлен вверх.
(2) Подсоедините провод электропитания к сетевому адаптеру переменного тока.
(3) Подсоедините провод электропитания к сетевой розетке.
(4) Установите переключатель POWER в положение OFF(CHARGE). Начнется зарядка, и лампочка CHG загорится.

Кода лампочка CHG погаснет, зарядка завершится.



After charging the battery pack

Disconnect the AC power adaptor from the DC IN jack on your camcorder.

После зарядки батарейного блока

Отсоедините сетевой адаптер переменного тока от гнезда DC IN на Вашей видеокамере.

Step 1 Preparing the power supply

Notes

- Prevent metallic objects from coming into contact with the metal parts of the DC plug of the AC power adaptor. This may cause a short-circuit, damaging the AC power adaptor.
- Keep the battery pack dry.
- When the battery pack is not to be used for a long time, charge the battery pack fully, and then use it until it fully discharges again. Do this once a year. Keep the battery pack in a cool place.

While charging the battery pack, the CHG lamp does not light up in the following cases

– The battery pack is not installed correctly.
– Something is wrong with the battery pack.

If the power may go off although the battery remaining indicator indicates that the battery pack has enough power to operate

Charge the battery pack fully again so that the indication on the battery remaining indicator is correct.

Пункт 1 Подготовка источника питания

Примечания

- Не допускайте контакта металлических предметов с металлическими частями штекера постоянного тока сетевого адаптера переменного тока. Это может привести к короткому замыканию и повреждению сетевого адаптера переменного тока.
- Храните батарейный блок в сухом состоянии.
- Если батарейный блок предполагается не использовать длительный период времени, зарядите батарейный блок полностью, а затем используйте до тех пор, пока он снова полностью не разрядится. Выполняйте это раз в год. Храните батарейный блок в прохладном месте.

Во время зарядки батарейного блока лампочка CHG не будет загораться в следующих случаях

– Батарейный блок установлен не правильно.
– Что-то не в порядке с батарейным блоком.

Если питание может отключиться несмотря на то, батарейный блок достаточно заряжен для работы

Зарядите батарейный блок полностью, так чтобы индикация времени оставшегося заряда батарейного блока была правильной.

Step 1 Preparing the power supply

Пункт 1 Подготовка источника питания

Charging time/Время зарядки

Battery pack/ Батарейный блок	Full charge / Полная зарядка
NP-F330 (supplied)/(прилагается)	150
NP-F530/F550	210
NP-F730/F750	300
NP-F930/F950	390
NP-F960	420

Approximate number of minutes to charge an empty battery pack

Приблизительное время в минутах для зарядки полностью разряженного батарейного блока

Recording time/Время записи

CCD-TRV49E/TRV58E/TRV59E/TRV78E

Battery pack/ Батарейный блок	Recording with the viewfinder/ Запись с помощью видоискателя		Recording with the LCD screen/ Запись с помощью экрана ЖКД	
	Continuous* Непрерывкая*	Typical** Типичная**	Continuous* Непрерывная*	Typical** Типичная**
NP-F330 (supplied)/(прилагается)	140	75	120	65
NP-F530	245	135	205	110
NP-F550	280	155	240	130
NP-F730	500	275	410	225
NP-F750	580	320	490	270
NP-F930	780	430	650	355
NP-F950	900	495	750	410
NP-F960	1035	570	880	490

CCD-TRV98E

Battery pack/ Батарейный блок	Recording with the viewfinder/ Запись с помощью видоискателя		Recording with the LCD screen/ Запись с помощью экрана ЖКД	
	Continuous* Непрерывкая*	Typical** Типичная**	Continuous* Непрерывная*	Typical** Типичная**
NP-F330 (supplied)/(прилагается)	140	75	95	50
NP-F530	245	135	155	85
NP-F550	280	155	190	105
NP-F730	500	275	315	175
NP-F750	580	320	385	210
NP-F930	780	430	495	270
NP-F950	900	495	590	325
NP-F960	1035	570	700	385

Step 1 Preparing the power supply

Пункт 1 Подготовка источника питания

Approximate number of minutes when you use a fully charged battery pack

- * Approximate continuous recording time at 25°C (77°F). The battery life will be shorter if you use your camcorder in a cold environment.
- ** Approximate number of minutes when recording while you repeat recording start/stop, zooming and turning the power on/off. The actual battery life may be shorter.

Приблизительное время в минутах при использовании полностью заряженного батарейного блока

- * Приблизительное время непрерывной записи при температуре 25°C (77°F). При использовании видеокамеры в холодных условиях срок службы батарейного блока будет короче.
- ** Приблизительное время в минутах при записи с неоднократным пуском/остановкой записи, наездом видеокамеры и включением/выключением питания. Фактический срок службы заряда батарейного блока может быть короче.

Playing time/Время воспроизведения

CCD-TRV49E/TRV58E/TRV59E/TRV78E

Battery pack/ Батарейный блок	Playing time on LCD screen/ Время воспроизведения на экране ЖКД	Playing time with LCD closed/ Время воспроизведения при закрытом ЖКД
NP-F330 (supplied)/(прилагается)	120	145
NP-F530	205	260
NP-F550	240	295
NP-F730	410	525
NP-F750	490	610
NP-F930	650	825
NP-F950	750	930
NP-F960	880	1090

CCD-TRV98E

Battery pack/ Батарейный блок	Playing time on LCD screen/ Время воспроизведения на экране ЖКД	Playing time with LCD closed/ Время воспроизведения при закрытом ЖКД
NP-F330 (supplied)/(прилагается)	95	145
NP-F530	155	260
NP-F550	190	295
NP-F730	315	525
NP-F750	385	610
NP-F930	495	825
NP-F950	590	930
NP-F960	700	1090

Step 1 Preparing the power supply

Пункт 1 Подготовка источника питания

Approximate number of minutes when you use a fully charged battery pack

The battery life will be shorter if you use your camcorder in a cold environment.

What is "InfoLITHIUM"?
The "InfoLITHIUM" is a lithium ion battery pack which can exchange data such as battery consumption with compatible electronic equipment. This unit is compatible with the "InfoLITHIUM" battery pack (L series). Your camcorder operates only with the "InfoLITHIUM" battery. "InfoLITHIUM" L series battery packs have the ⓘ InfoLITHIUM Ⓛ mark. "InfoLITHIUM" is a trademark of Sony Corporation.

Приблизительное время в минутах при использовании полностью заряженного батарейного блока

При использовании видеокамеры в холодных условиях срок службы батарейного блока будет короче.

Что такое "InfoLITHIUM"?
"InfoLITHIUM" представляет собой литиево-ионный батарейный блок, который может обмениваться данными, такими как потребление заряда батарейного блока, с совместимой электронной аппаратурой. Это устройство совместимо с батарейным блоком "InfoLITHIUM" (серии L). Ваша видеокамера работает только с батарейным блоком "InfoLITHIUM". На батарейных блоках серии "InfoLITHIUM" L имеется знак ⓘ InfoLITHIUM Ⓛ. "InfoLITHIUM" является торговой маркой корпорации Sony Corporation.

Step 1 Preparing the power supply

Пункт 1 Подготовка источника питания

Connecting to the mains

When you use your camcorder for a long time, we recommend that you power it from the mains using the AC power adaptor.

(1) Open the DC IN jack cover, and connect the AC power adaptor to the DC IN jack on your camcorder with the plug's ▲ mark facing up.

(2) Connect the mains lead to the AC power adaptor.

(3) Connect the mains lead to the mains.

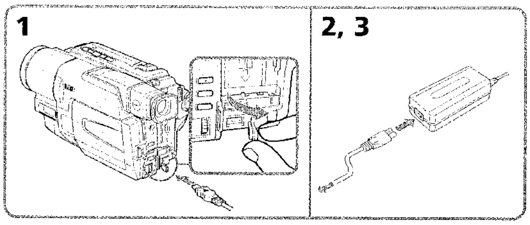
Подсоединение к сетевой розетке

Если Вы собираетесь использовать видеокамеру длительное время, рекомендуется использовать питание от электрической сети с помощью сетевого адаптера переменного тока.

(1) Откройте крышку гнезда DC IN и подсоедините сетевой адаптер переменного тока к гнезду DC IN на Вашей видеокамеру, так чтобы знак ▲ на штекере был обращен вверх.

(2) Подсоедините провод электропитания к сетевому адаптеру переменного тока.

(3) Подсоедините провод электропитания к сетевой розетке.



Step 1 Preparing the power supply

PRECAUTION
The set is not disconnected from the AC power source (mains) as long as it is connected to the mains, even if the set itself has been turned off.

Notes
- The AC power adaptor can supply power even if the battery pack is attached to your camcorder.
- The DC IN jack has "source priority". This means that the battery pack cannot supply any power if the mains lead is connected to the DC IN jack, even when the mains lead is not plugged into the mains.
- Place the AC power adaptor near mains. While using the AC power adaptor, if any trouble occurs with this unit, disconnect the plug from the mains as soon as possible to cut off the power.

Using a car battery
Use Sony DC Adaptor/Charger (optional).

Пункт 1 Подготовка источника питания

МЕРА ПРЕДОСТОРОЖНОСТИ
Аппарат не отключается от источника питания переменного тока (электрической сети) до тех пор, пока он остается подсоединенным к электрической сети, даже если сам аппарат и выключен.

Примечания
- Питание от сетевого адаптера переменного тока может подаваться даже в случае, если батарейный блок прикреплен к Вашей видеокамере.
- Гнездо DC IN имеет "приоритет источника". Это значит, что питание от батарейного блока не может подаваться, если провод электропитания подсоединен к гнезду DC IN, даже если провод электропитания и не подсоединен к сетевой розетке.
- Разместите сетевой адаптер переменного тока возле электросети. Во время использования сетевого адаптера переменного тока, если с данным аппаратом возникнет какая-либо проблема, отсоедините штекер от электросети как можно быстрее для отключения питания.

Использование автомобильного аккумулятора
Используйте адаптлер/зарядное устройство постоянного тока Sony (не прилагается).

Step 2 Setting the date and time

Set the date and time settings when you use your camcorder for the first time.

If you do not use your camcorder for about 4 months, the date and time settings may be released (bars may appear) because the built-in rechargeable lithium cell in your camcorder will have been discharged.
First, set the year, then the month, the day, the hour and then the minute.

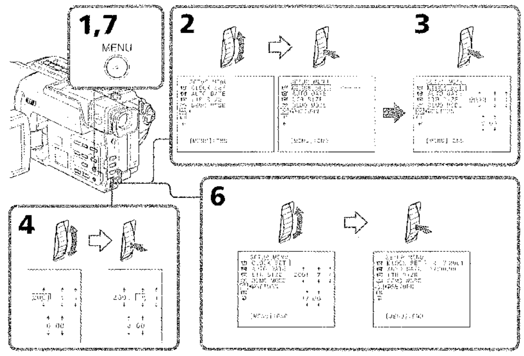
(1) While your camcorder is in CAMERA mode, press MENU to display the menu.
(2) Turn the SEL/PUSH EXEC dial to select ⊞, then press the dial.
(3) Turn the SEL/PUSH EXEC dial to select CLOCK SET, then press the dial.
(4) Turn the SEL/PUSH EXEC dial to adjust the desired year, then press the dial.
(5) Set the month, day and hour by turning the SEL/PUSH EXEC dial and pressing the dial.
(6) Set the minute by turning the SEL/PUSH EXEC dial and pressing the dial by the time signal. The clock starts to move.
(7) Press MENU to make the menu disappear. The time indicator appears.

Пункт 2 Установка даты и времени

Если Вы используете Вашу видеокамеру впервые, выполните установки даты и времени.

Если Вы не собираетесь использовать Вашу видеокамеру около 4 месяцев, установки даты и времени могут быть стерты (могут появиться черточки), потому что встроенный перезаряжаемый литиевый элемент в Вашей видеокамере разрядится.
Сначала установите год, затем месяц, день, час, а затем минуту.

(1) В режиме видеокамеры CAMERA, нажмите кнопку MENU для отображения меню.
(2) Поверните диск SEL/PUSH EXEC для выбора индикации ⊞, а затем нажмите диск.
(3) Поверните диск SEL/PUSH EXEC для выбора команды CLOCK SET, а затем нажмите диск.
(4) Поверните диск SEL/PUSH EXEC для выбора нужного года, а затем нажмите диск.
(5) Установите месяц, день и час путем вращения диска SEL/PUSH EXEC и нажимания диска.
(6) Установите минуту путем вращения диска SEL/PUSH EXEC и нажимания диска в момент передачи сигнала точного времени. Часы начнут функционировать.
(7) Нажмите кнопку MENU для того, чтобы закрыть меню. Появится индикатор времени.



Step 2 Setting the date and time

To check the preset date and time
Press DATE to display the date indicator.
Press TIME to display the time indicator.
Press DATE (or TIME) and then press TIME (or DATE) to simultaneously display the date and time indicator.
Press DATE and/or TIME again. The date and/or time indicator disappears.

The year changes as follows:

1995 ←····→ 2001 ←····→ 2079
↑__________________________↑

Auto date function
When you use your camcorder for the first time, turn it on and reset the date and time to your local time before you start recording (p. 22). The date is automatically recorded for 10 seconds after you start recording **(Auto date function)**. This function works only once a day.

Note on the time indicator
The internal clock of your camcorder operates on a 24-hour cycle.

Note on the auto date function
You can change the AUTO DATE setting by selecting ON or OFF in the menu settings. The auto date function automatically displays the date once a day.
However, the date may automatically appear more than once a day if:
– you reset the date and time.
– you eject and insert the tape again.
– you stop recording within 10 seconds.
– you set AUTO DATE to OFF once and set it back to ON in the menu settings.

Пункт 2 Установка даты и времени

Для проверки предварительно установленных даты и времени
Нажмите кнопку DATE для отображения индикатора даты.
Нажмите кнопку TIME для отображения индикатора времени.
Нажмите кнопку DATE (или TIME), а затем нажмите кнопку TIME (или DATE) для одновременного отображения индикатора даты и времени.
Нажмите еще раз кнопку DATE и/или TIME. Индикатор даты и/или времени исчезнет.

Год изменяется следующим образом:

Функция автоматической даты
Если Вы используете видеокамеру первый раз, включите ее и переустановите дату и время в соответствии со своим часовым поясом, прежде чем начать запись (стр. 22). Даты будет автоматически записываться в течение 10 секунд после начала записи **(функция автоматической даты)**. Эта функция работает один раз в день.

Примечание по индикатору времени
Встроенные часы Вашей видеокамеры работают в 24-часовом режиме.

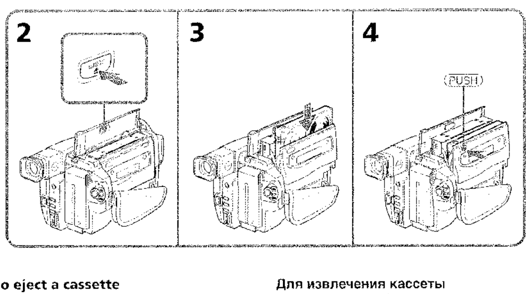
Примечание по функции автоматической даты
Вы можете изменять установку AUTO DATE путем выбора положений ON или OFF в установках меню. Функция автоматической даты автоматически отбражает дату один раз в день.
Однако, дата может автоматически появляться больше одного раза при:
– переустановке даты и времени.
– выталкивании и установке ленты обратно на место.
– остановке записи в пределах 10 секунд.
– установке команды AUTO DATE в положение OFF и возвращении в положение ON в установках меню.

Step 3 Inserting a cassette

When you want to record in the Hi8 system, use Hi8 video cassettes **Hi8**.
(1) Prepare the power supply (p. 14).
(2) Open the lid of the cassette compartment, and press EJECT. The cassette compartment opens automatically.
(3) Insert a cassette with its window facing out and the write-protect tab on the cassette up.
(4) Close the cassette compartment by pressing the (PUSH) mark on the cassette compartment. The cassette compartment automatically goes down.
(5) Close the lid of the cassette compartment.

Пункт 3 Установка кассеты

Если Вы хотите выполнять запись в системе Hi8, используйте видеокассету Hi8 **Hi8**.
(1) Подготовьте источник питания (стр. 14).
(2) Откройте крышку кассетного отсека и нажмите кнопку EJECT. Кассетный отсек откроется автоматически.
(3) Вставьте кассету так, чтобы окошко было обращено наружу, а лепесток защиты от записи на кассете – вверх.
(4) Закройте кассетный отсек, нажав метку (PUSH) на кассетном отсеке. Кассетный отсек автоматически опустится вниз.
(5) Закройте крышку кассетного отсека.



To eject a cassette
Follow the procedure above, and eject the cassette in step **3**.

Для извлечения кассеты
Следуйте описанной выше процедуре и извлеките кассету в пункте **3**.

Step 3 Inserting a cassette

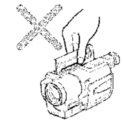
Notes

- Do not press the cassette compartment down. Doing so may cause a malfunction.
- The cassette compartment may not be closed when you press any part of the cassette compartment other than the (PUSH) mark.
- Do not pick up your camcorder by holding the lid of the cassette compartment.

Пункт 3 Установка кассеты

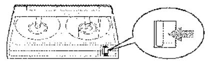
Примечания

- Не нажимайте вниз кассетный отсек. Это может привести к неисправности.
- Кассетный отсек может не закрыться, если Вы нажмете на какое-либо другое место на кассетном отсеке, а не на отметку (PUSH).
- Не поднимайте Вашу видеокамеру, удерживая ее за крышку кассетного отсека.



To prevent accidental erasure
Slide the write-protect tab on the cassette to expose the red mark.

Для предотвращения случайного стирания
Передвиньте лепесток защиты записи на кассете, так чтобы появилась красная метка.



— Recording – Basics —

Recording a picture

Your camcorder automatically focuses for you.

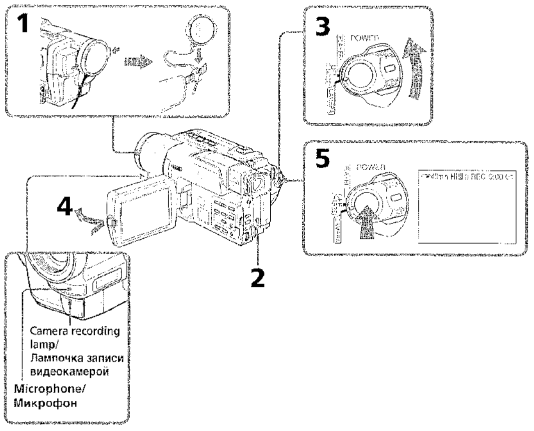
(1) Remove the lens cap by pressing both knobs on its sides and attach the lens cap to the grip strap.
(2) Install the power source and insert a cassette. See "Step 1" to "Step 3" for more information (p. 14 to 25).
(3) Set the POWER switch to CAMERA while pressing the small green button. Your camcorder is set to the standby mode.
(4) Open the LCD panel while pressing OPEN. The viewfinder automatically turns off.
(5) Press START/STOP. Your camcorder starts recording. The REC indicator appears. The camera recording lamp located on the front of your camcorder lights up. To stop recording, press START/STOP again.
The recording lamp lights up in the viewfinder when you record with the viewfinder.

— Запись – Основные положения —

Запись изображения

Ваша видеокамера автоматически выполняет фокусировку за Вас.

(1) Снимите крышку объектива, нажав обе кнопки на ее кромке, и прикрепите крышку объектива к ремню для захвата.
(2) Установите источник питания и вставьте кассету. Подробные сведения приведены в "Пункте 1" до "Пункте 3" (стр. 14 – 25).
(3) Нажав маленькую зеленую кнопку, установите переключатель POWER в положение CAMERA. Ваша видеокамера переключится в режим ожидания.
(4) Нажав кнопку OPEN, откройте панель ЖКД. Видоискатель выключится автоматически.
(5) Нажмите кнопку START/STOP. Ваша видеокамера начнет запись. Появится индикатор REC. Высветится также лампочка записи, расположенная на передней панели видеокамеры. Для остановки записи нажмите кнопку START/STOP еще раз.
При записи с помощью видоискателя, внутри него высветится лампочка записи.



Camera recording lamp/
Лампочка записи видеокамерой

Microphone/
Микрофон

Recording a picture

Note
Fasten the grip strap firmly. Do not touch the built-in microphone during recording.

To enable smooth transition
You can make the transition between the last scene you recorded and the next scene smooth as long as you do not eject the cassette even if you turn off your camcorder. When you change the battery pack, set the POWER switch to OFF (CHARGE).

If you leave your camcorder in the standby mode for 5 minutes while the cassette is inserted
Your camcorder automatically turns off. This is to save battery power and to prevent battery and tape wear. To resume the standby mode, set the POWER switch to OFF (CHARGE) once, then turn it to CAMERA again.

To set the counter to 0:00:00
Press COUNTER RESET (p. 113).

After recording

(1) Set the POWER switch to OFF (CHARGE).
(2) Close the LCD panel.
(3) Eject the cassette.
(4) Attach the lens cap

After using your camcorder
Remove the battery pack from your camcorder to avoid turning on the built-in light accidentally.

Запись изображения

Примечания
Плотно пристегните ремень для захвата видеокамеры. Не прикасайтесь к встроенному микрофону во время записи.

Для обеспечения плавного перехода
Вы можете выполнять плавный переход между последним записанным эпизодом и следующим эпизодом до тех пор, пока не извлечете кассету, даже при выключении Вашей видеокамеры. При замене батарейного блока установите переключатель POWER в положение OFF (CHARGE).

Если Вы оставите Вашу видеокамеру в режиме готовности на 5 минут при вставленной кассете
Ваша видеокамера выключится автоматически. Это предотвращает расход заряда батарейного блока и износ ленты. Для возобновления режима ожидания установите сначала переключатель POWER в положение OFF (CHARGE), а затем снова верните его в положение CAMERA.

Для установки счетчика в положение 0:00:00
Нажмите кнопку COUNTER RESET (стр. 113).

После записи

(1) Установите переключатель POWER в положение OFF (CHARGE).
(2) Закройте панель ЖКД.
(3) Извлеките кассету.
(4) Присоедините колпачок объектива

После использования видеокамеры
Выньте батарейный блок из Вашей видеокамеры во избежание случайного включения встроенной подсветки.

Recording a picture

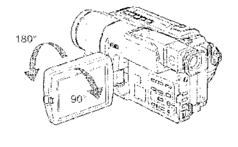
Adjusting the LCD screen

The LCD panel moves about 90 degrees to the viewfinder side and about 180 degrees to the lens side.
If you turn the LCD panel over so that it faces the other way, the ◎ indicator appears on the screen (**Mirror mode**).

Запись изображения

Регулировка экрана ЖКД

Панель ЖКД может передвигаться примерно на 90 градусов в сторону видоискателя и примерно на 180 градусов в сторону объектива.
Если Вы повернете панель ЖКД так, что будет направлена в другую сторону, на экране появится индикатор ◎ (**Зеркальный режим**).



When closing the LCD panel, set it vertically until it clicks, and swing it into the camcorder body.

Note
When using the LCD screen except in the mirror mode, the viewfinder automatically turns off.

When you use the LCD screen outdoors in direct sunlight
The LCD screen may be difficult to see. If this happens, we recommend that you use the viewfinder.

Picture in the mirror mode
The picture on the LCD is a mirror-image. However, the picture will be normal when recorded.

During recording in the mirror mode
DATE and TIME on your camcorder do not work.

При закрывании панели ЖКД установите ее вертикально, пока не раздастся щелчок, а затем присоедините ее к корпусу видеокамеры.

Примечание
При использовании экрана ЖКД видоискатель автоматически выключается, кроме зеркального режима.

Если Вы используете экран ЖКД вне помещения под прямым солнечным светом
Возможно будет трудно разглядеть экран ЖКД. В этом случае рекомендуется использовать видоискатель.

Изображение в зеркальном режиме
Изображение на экране ЖКД будет отображаться зеркально. Однако запись изображения будет нормальной.

Во время записи в зеркальном режиме
Функции DATE и TIME на Вашей видеокамере не работают.

Recording a picture

Indicators in the mirror mode

- The STBY indicator appears as **II●** and REC as ●. Some of the other indicators appear mirror-reversed and others are not displayed.
- The date appears mirror-reversed when the auto date function is working. However, the date will be normal when recorded.

Запись изображения

Индикаторы в зеркальном режиме

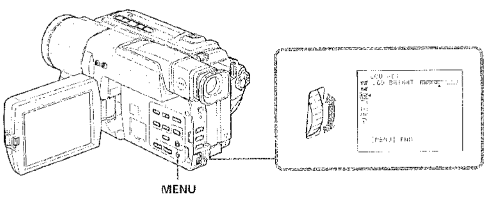
- Индикатор STBY появится в виде **II●**, а индикатор REC в виде ●. Некоторые другие индикаторы появятся в зекально отображенном виде, а некоторые из них не будут отображаться совсем.
- В случае, если работает функция автоматической даты, то дата будет отображаться зеркально, однако на записи дата будет в нормальном виде.

Adjusting the brighthess of the LCD screen

Adjust the brightness of the LCD screen with LCD BRIGHT in ▣ in the menu settings.

Регулировка яркости экрана ЖКД

Отрегулируйте яркость экрана ЖКД с помощью команды LCD BRIGHT в ▣ в установках меню.



LCD screen backlight

You can adjust the brightness of the backlight. Select LCD B.L. in the menu settings (p. 70).

Even if you adjust the LCD screen backlight

The recorded picture will not be affected.

Задняя подсветка экрана ЖКД

Вы можете отрегулировать яркость задней подсветки. Выберите пункт LCD B.L. в установках меню (стр. 75)

Даже если Вы регулируете заднюю подсветку экрана ЖКД

На записанное изображение это не повлияет.

Recording a picture

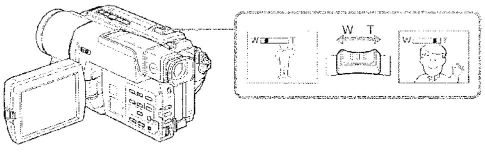
Using the zoom feature

Move the power zoom lever a little for a slower zoom. Move it further for a faster zoom.
Using the zoom function sparingly results in better-looking recordings.
"T" side: for telephoto (subject appears closer)
"W" side: for wide-angle (subject appears farther away)

Запись изображения

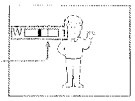
Использование функции наезда видеокамеры

Передвиньте рычаг приводного вариообъектива слегка для относительно медленного наезда видеокамеры.
Передвиньте его сильнее для ускоренного наезда видеокамеры.
Использование функции наезда видеокамеры в небольшом количестве обеспечивает наилучшие результаты.
Сторона "T" : для телефото (объект приближается)
Сторона "W" : для широкоугольного вида (объект удаляется)



Zoom greater than 20× is performed digitally.
To activate digital zoom, select the digital zoom power in D ZOOM in the menu settings (p. 69).
The picture quality deteriorates as the picture is processed digitally.

Наезд видеокамеры более 20× выполняется цифровым методом.
Для приведения в действие цифрового вариообъектива выберите в установках меню приводной цифровой вариообъектив D ZOOM (стр. 74). Качество изображения будет немного худшим, поскольку обработка изображения ведется цифровым способом.



The right side of the bar shows the digital zooming zone.
The digital zooming zone appears when you select the digital zoom power in D ZOOM in the menu settings./
Правая сторона полосы на экране показывает зону цифровой трансфокации.
Если в установках меню Вы выберите цифровой приводной объектив D ZOOM, то появится зона цифровой трансфокации.

Recording a picture

When you shoot close to a subject

If you cannot get a sharp focus, move the power zoom lever to the "W" side until the focus is sharp. You can shoot a subject that is at least about 80 cm (about 2 feet 5/8 inch) away from the lens surface in the telephoto position, or about 1 cm (about 1/2 inch) away in the wide-angle position.

Notes on digital zoom

- Digital zoom starts to function when zoom exceeds 20×.
- The picture quality deteriorates as you go toward the "T" side.

Запись изображения

При съемке объекта с близкого положения

Если Вы не можете получить четкой фокусировки, передвиньте рычаг приводного вариообъектива сторону "W" до получения четкой фокусировки. Вы можете выполнять съемку объекта в положении телефото, который отстоит по крайней мере на расстоянии 80 см от поверхности объектива или же около 1 см в положении широкоугольного вида.

Примечания к наезду видеокамеры цифровым методом

- Цифровой вариообъектив начинает срабатывать в случае, если наезд видеокамеры превышает 20×.
- Качество изображения ухудшается по мере приближения к стороне "T".

To record pictures with the viewfinder – adjusting the viewfinder

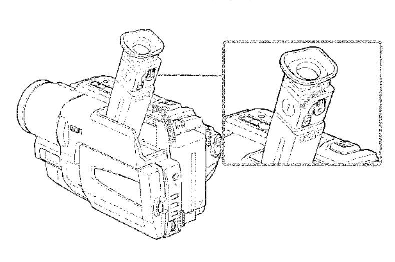
If you record pictures with the LCD panel closed, check the picture with the viewfinder. Adjust the viewfinder lens to your eyesight so that the indicators in the viewfinder come into sharp focus.

Lift up the viewfinder and move the viewfinder lens adjustment lever.

Для записи изображений с помощью видоискателя – регулировка видоискателя

Если Вы будете записывать изображения при закрытой панели ЖКД, проверьте изображение с помощью видоискателя. Отрегулируйте объектив видоискателя в соответствии со своим зрением, так чтобы индикаторы в видоискателе были четко сфокусированы.

Поднимите видоискатель и подвигайте рычаг регулировки объектива видоискателя.



Recording a picture

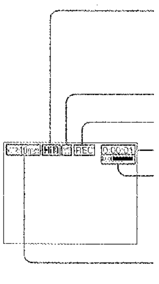
Indicators displayed in the recording mode

The indicators are not recorded on tape.

Запись изображения

Индикаторы, отображаемые в режиме записи

Индикаторы не записываются на ленту.



Hi8 format indicator
This appears while playing back or recording in Hi8 format. This appears after you insert a cassette for a while./
Индикатор формата Hi8
Этот индикатор появляется во время воспроизведения или записи в формате Hi8. Этот индикатор появляется через некоторое время после установки кассеты./

Recording mode indicator/Индикатор режима записи

STBY/REC indicator/Индикатор STBY/REC

Tape counter indicator/Индикатор счетчика ленты

Remaining tape indicator
This appears after you insert a cassette and record or play back for a while./
Индикатор оставшейся ленты
Этот индикатор появляется после установки кассеты и выполнения записи или воспроизведения в течение некоторого времени.

Remaining battery time indicator/
Индикатор времени оставшегося заряда батарейного блока

Note on the remaining battery time indicator

The remaining battery time indicator roughly indicates the recording time. The indicator may not be correct, depending on the conditions in which you are recording when you close the LCD panel and open it again, it takes about 1 minute for the correct remaining battery time in minutes to be displayed.

Примечание относительно времени оставшегося заряда батарейного блока

Индикатор времени оставшегося заряда батарейного блока в окошке дисплея в общем означает время записи. Индикатор может быть неточным, в зависимости от условий, в которых Вы выполняете запись. Если закроете панель ЖКД и откроете ее снова, понадобится около 1 минуты для того, чтобы правильное время оставшегося заряда батарейного блока отобразилось на дисплее.

Shooting backlit subjects – BACK LIGHT

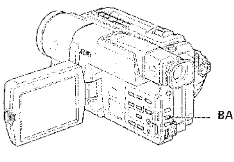
When you shoot a subject with the light source behind the subject or a subject with a light background, use the backlight function.

Press BACK LIGHT in CAMERA mode.
The ⧅ indicator appears on the screen.
To cancel, press BACK LIGHT again.

Съемка объектов с задней подсветкой – BACK LIGHT

Если Вы выполняете съемку объекта с источником света позади него или же объекта со светлым фоном, используйте функцию задней подсветки.

Нажмите кнопку BACK LIGHT в режиме CAMERA.
На экране появится индикатор ⧅.
Для отмены, нажмите кнопку BACK LIGHT.



If you press EXPOSURE when shooting backlit subjects
The backlight function will be canceled.

Если вы нажмете кнопку EXPOSURE при выполнении съемки объектов с задней подсветкой
Функция задней подсветки будет отменена.

Shooting in the dark – NightShot

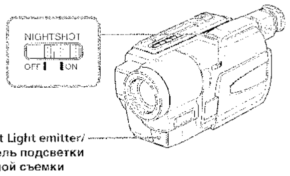
The NightShot function enables you to shoot a subject in a dark place. For example, you can satisfactorily record the environment of nocturnal animals for observation when you use this function.

While your camcorder is in CAMERA mode, slide NIGHTSHOT to ON.
⦿ and "NIGHTSHOT" indicators flash on the screen. To cancel the NightShot function, slide NIGHTSHOT to OFF.

Съемка в темноте – Ночная съемка

Функция ночной съемки позволяет Вам выполнять съемку объектов в темных местах. Например, Вы сможете с успехом выполнять съемку ночных животных для наблюдения при использовании данной функции.

В то время, когда Ваша видеокамера находится в режиме CAMERA, передвиньте переключатель NIGHTSHOT в положение ON. Индикаторы ⦿ и "NIGHTSHOT" начнут мигать на экране. Для отмены функции ночной съемки передвиньте переключатель NIGHTSHOT в положение OFF.



Using the NightShot Light
The picture will be clearer with the NightShot Light on. To enable the NightShot Light, set N.S.LIGHT to ON in the menu settings (p. 69).

Использование подсветки для ночной съемки
Изображение станет ярче, если включить функцию ночной подсветки. Для включения функции ночной подсветки установите переключатель N.S.LIGHT в положение ON в установках меню (стр. 74).

Notes
- Do not use the NightShot function in bright places (ex. outdoors in the daytime). This may cause your camcorder to malfunction.
- When you keep NIGHTSHOT setting to ON in normal recording, the picture may be recorded in incorrect or unnatural colours.
- If focusing is difficult with the autofocus mode when using the NightShot function, focus manually.

While using the NightShot function, you can not use the following functions:
– Exposure
– PROGRAM AE

NightShot Light
NightShot Light rays are infrared and so are invisible. The maximum shooting distance using the NightShot Light is about 3 m (10 feet).

Примечания
- Не используйте функцию ночной съемки в ярких местах (например, на улице в дневное время). Это может привести к неисправности Вашей видеокамеры.
- При удержании установки NIGHTSHOT в положении ON при нормальной записи изображение может быть записано в неправильных или неестественных цветах.
- Если фокусировка затруднена в автоматическом режиме при использовании функции ночной съемки, выполните фокусировку вручную.

При использовании функции ночной съемки Вы не можете использовать следующие функции:
– Экспозиция
– PROGRAM AE

Подсветка для ночной съемки
Лучи подсветки для ночной съемки являются инфракрасными и поэтому невидимыми. Максимальное расстояние для съемки при использовании подсветки для ночной съемки равно примерно 3 м.

Superimposing the date and time on pictures

You can record the date and/or time displayed on the screen superimposed on the picture. Carry out the following operations in CAMERA mode.

Press DATE to record the date.
Press TIME to record the time.
Press DATE (or TIME), then press TIME (or DATE) to record the date and time.

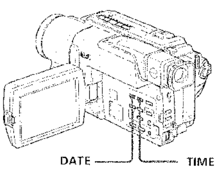
Press DATE and/or TIME again. The date and/or time indicator disappears.

Наложение даты и времени на изображения

Вы можете записывать дату и/или время, отображаемые на экране, которые будут наложены на изображение.
Выполните следующие операции в режиме CAMERA.

Нажмите кнопку DATE для записи даты.
Нажмите кнопку TIME для записи даты.
Нажмите кнопку DATE (или TIME), затем нажмите кнопку TIME (или DATE) для записи даты и времени.

Нажмите кнопку DATE и/или TIME еще раз. Индикатор даты и/или времени исчезнет.



When you purchase your camcorder, the clock setting is set to off. Set the date and time to your local time before using (p. 22).

Note
The date and time indicators recorded manually cannot be deleted.

If you do not record the date and time in the picture
Record the date and time in the black screen as the background for about 10 seconds, then erase the date and time indicators before starting actual recording.

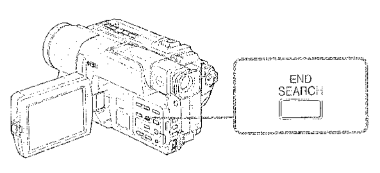
Когда Вы покупаете Вашу видеокамеру, установка часов выключена. Установите дату и время в соответствии с Вашим местным временем перед использованием (стр.22).

Примечание
Индикаторы даты и времени, записанные вручную, не могут быть удалены.

Если Вы не записываете дату и время на изображении
Запишите дату и время на фоне черного экрана в течение 10 секунд, затем сотрите индикаторы даты и времени перед тем, как начать действительную запись.

Checking the recording – END SEARCH

You can use this button to record a picture from the last recorded scene successively.



You can go to the end of the recorded section after you record.

Press END SEARCH in CAMERA mode.
The last 5 seconds of the recorded section are played back and the playback stops. You can monitor the sound from the speaker or an earphone.

Note
If you start recording after using the end search function, occasionally, the transition between the last scene you recorded and the next scene may not be smooth.

Once you eject the cassette after you have recorded on the tape
The end search function does not work.

Проверка записи – END SEARCH

Вы можете использовать эту кнопку для последовательной записи за последним записанным эпизодом.

Вы можете дойти до конца записанной части ленты после выполнения записи.

Нажмите кнопку END SEARCH в режиме CAMERA. Будут воспроизведены последние 5 секунд записанной части, и воспроизведение остановится. Вы можете контролировать звук через акустическую систему или наушники.

Примечание
Если Вы случайно начнете запись после использования функции поиска конца записи, переход между последней записанной сценой и следующей записываемой сценой может не быть плавным.

Если Вы вынули кассету после записи на ленту
Функция поиска конца записи работать не будет.

Playing back a tape

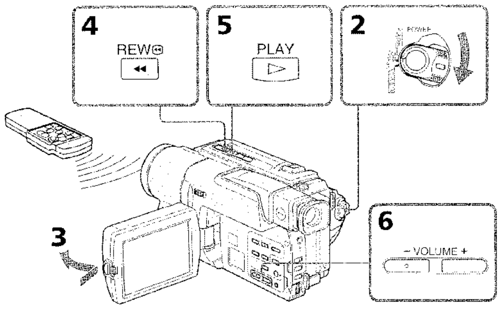
You can monitor the playback picture on the screen. If you close the LCD panel, you can monitor the playback picture in the viewfinder. You can control playback using the Remote Commander supplied with your camcorder. (CCD-TRV49E/TRV59E/TRV78E/TRV98E)

(1) Install the power source and insert the recorded tape.
(2) Set the POWER switch to PLAYER while pressing the small green button.
(3) Open the LCD panel while pressing OPEN.
(4) Press ◀◀ to rewind the tape.
(5) Press ▶ to start playback.
(6) To adjust the volume, press either of the two buttons on VOLUME. The speaker on your camcorder is silent when the LCD panel is closed.

Воспроизведение ленты

Вы можете контролировать воспроизводимое изображение на экране. Если Вы закроете панель ЖКД, Вы сможете контролировать воспроизводимое изображение в видоискателе. Вы можете контролировать воспроизведение с помощью пульта дистанционного управления, прилагаемого к Вашей видеокамере. (модели CCD-TRV49E/TRV59E/TRV78E/TRV98E)

(1) Установите источник питания и вставьте записанную ленту.
(2) Установите переключатель POWER в положение PLAYER, нажав маленькую зеленую кнопку.
(3) Нажав кнопку OPEN, откройте панель ЖКД.
(4) Нажмите кнопку ◀◀ для ускоренной перемотки ленты назад.
(5) Нажмите кнопку ▶ для включенин воспроизведенин.
(6) Для регулировки громкости нажимайте одну из двух кнопок VOLUME. Если панель ЖКД на Вашей видеокамере закрыта, динамик не будет работать.



To stop playback
Press ■.

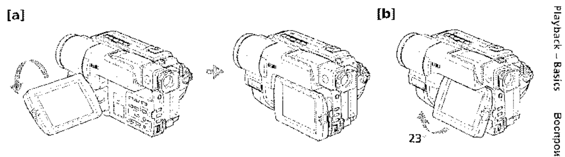
Для остановки воспроизведения
Нажмите кнопку ■.

Playing back a tape

When monitoring on the LCD screen
You can turn the LCD panel over and move it back to the camcorder body with the LCD screen facing out **[a]**. You can adjust the angle of the LCD panel by lifting the LCD panel up by 23 degrees **[b]**.

Воспроизведение ленты

Во время контроля на экране ЖКД
Вы можете повернуть панель управления и придвинуть ее обратно на место к корпусу видеокамеры, так что экран ЖКД будет обращен наружу **[a]**.Вы можете отрегулировать угол панели ЖКД, подняв панель ЖКД вверх на 23 градусов **[b]**.

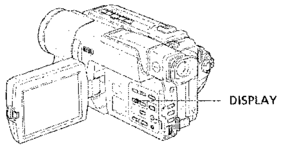


To control the display of the screen indicators

Press DISPLAY on your camcorder or the Remote Commander (CCD-TRV49E/TRV59E/TRV78E/TRV98E) supplied with your camcorder.
The indicators appear on the LCD screen.
To make the indicators disappear, press DISPLAY again.

Для контроля экранных индикаторов

Нажмите кнопку DISPLAY на Вашей видеокамере или на пульте дистанционного управления (модели CCD-TRV-49E/TRV59E/TRV78E/TRV98E), который прилагается к Вашей видеокамере.
На экране ЖКД появятся индикаторы.
Для того, чтобы индикаторы исчезли, нажмите еще раз кнопку DISPLAY.



Playing back a tape

Various playback modes

To operate video control buttons, set the POWER switch to PLAYER.

To view a still picture (playback pause)
Press ❚❚ during playback. To resume playback, press ❚❚ or ▶.

To advance the tape
Press ▶▶ in the stop mode. To resume normal playback, press ▶.

To rewind the tape
Press ◀◀ in the stop mode. To resume normal playback, press ▶.

To locate a scene monitoring the picture (picture search)
Keep pressing ◀◀ or ▶▶ during playback. To resume normal playback, release the button.

To monitor the high-speed picture while advancing or rewinding the tape (skip scan)
Keep pressing ◀◀ while rewinding or ▶▶ while advancing the tape. To resume rewinding or advancing, release the button.

To view the picture at slow speed (slow playback)
– CCD-TRV49E/TRV59E/TRV78E/TRV98E only
Press ❚▶ on the Remote Commander during playback. To resume normal playback, press ▶.

To search the last scene recorded (END SEARCH)
Press END SEARCH in the stop mode. The last 5 seconds of the recorded section are played back and the playback stops.

Воспроизведение ленты

Переменные режимы воспроизведения

Для использования кнопок управления видео установите переключатель POWER в положение PLAYER.

Для просмотра неподвижного изображения (пауза воспроизведения)
Нажмите во время воспроизведения кнопку ❚❚. Для возобновления обычного воспроизведения нажмите кнопку ❚❚ или кнопку ▶.

Для ускоренной перемотки ленты вперед
Нажмите в режиме остановки кнопку ▶▶. Для возобновления обычного воспроизведения нажмите кнопку ▶.

Для ускоренной перемотки ленты назад
Нажмите в режиме остановки кнопку ◀◀. Для возобновления обычного воспроизведения нажмите кнопку ▶.

Для отыскания эпизода во время контроля изображения (поиск изображения)
Держите нажатой кнопку ◀◀ или ▶▶ во время воспроизведения. Для восстановления обычного воспроизведения отпустите кнопку.

Для контроля изображения на высокой скорости во время ускоренной перемотки ленты вперед или назад (поиск методом прогона)
Держите нажатой кнопку ◀◀ во время ускоренной перемотки ленты назад или кнопку ▶▶ во время ускоренной перемотки ленты вперед. Для возобновления обычной перемотки ленты вперед или назад отпустите кнопку.

Для просмотра изображения на медленной скорости (замедленное воспроизведение)
– Только модели CCD-TRV49E/TRV59E/TRV78E/TRV98E
Нажмите во время воспроизведения кнопку ❚▶ на пульте дистанционного управления. Для возобновления обычного воспроизведения нажмите кнопку ▶.

Для поиска последнего записанного эпизода (END SEARCH)
Нажмите кнопку END SEARCH в режиме остановки. Будут воспроизведены последние 5 секунд записанного участка, и воспроизведение прекратится.

Playing back a tape

In the various playback modes
Sound is muted.

When the playback pause mode lasts for 5 minutes
Your camcorder automatically enters the stop mode. To resume playback, press ►.

If slow playback lasts for about 1 minute (CCD-TRV49E/TRV59E/TRV78E/TRV98E only)
Your camcorder automatically returns to normal speed.

When you play back a tape
Noise may appear during playback pause mode, slow playback or picture search.

When you play back a tape in reverse
Horizontal noise may appear at the centre or top and bottom of the screen.
This is not a malfunction.

Воспроизведение ленты

В переменных режимах воспроизведения
Звук будет приглушен.

Если режим паузы воспроизведения продлится 5 минут
Ваша видеокамера автоматически войдет в режим остановки. Для возобновления воспроизведения воспроизведения нажмите кнопку ►.

Если замедленное воспроизведение продлится около 1 минуты (Только модели CCD-TRV49E/TRV59E/TRV78E/TRV98E)
Ваша видеокамера автоматически переключится на нормальную скорость.

При воспроизведении записанной ленты
В режиме паузы воспроизведения, замедленного воспроизведения или поиска изображения могут появиться помехи.

При воспроизведении ленты в обратном направлении
Могут появиться горизонтальные помехи в центре или вверху и внизу экрана.
Этой не является неисправностью.

Viewing the recording on TV

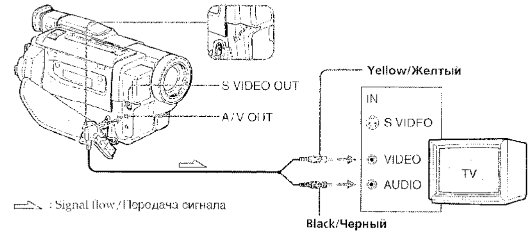
Connect your camcorder to your TV with the A/V connecting cable supplied with your camcorder to watch the playback picture on the TV screen. You can operate the playback control buttons in the same way as when you monitor playback pictures on the LCD screen. When monitoring the playback picture on the TV screen, we recommend that you power your camcorder from the mains using the AC power adaptor (p. 20). Refer to the operating instructions of your TV.

Open the jack cover. Connect your camcorder to the TV using the A/V connecting cable. Then, set the TV/VCR selector on the TV to VCR.

Просмотр записи на экране телевизора

Подсоедините Вашу видеокамеру к Вашему телевизору с помощью соединительного кабеля аудио/видео, который прилагается к Вашей видеокамере для просмотра воспроизводимого изображения на экране телевизора. Вы можете оперировать кнопками управления воспроизведением таким же способом, как при управлении воспроизводимым изображением на экране ЖКД. При управлении воспроизводимым изображением на экране телевизора рекомендуется подключить питание к Вашей видеокамере от сетевой розетки с помощью сетевого адаптера переменного тока (стр. 20). См. инструкцию по эксплуатации Вашего телевизора.

Откройте крышку гнезд. Подсоедините Вашу видеокамеру к телевизору с помощью соединительного кабеля аудио/видео. Затем, установите переключатель TV/VCR на Вашем телевизоре в положение VCR.



: Signal flow/Передача сигнала

If your TV is already connected to a VCR

Connect your camcorder to the LINE IN input on the VCR by using the A/V connecting cable supplied with your camcorder. Set the input selector on the VCR to LINE.

Если Ваш телевизор уже подсоединен к КВМ

Подсоедините Вашу видеокамеру к входному гнезду LINE IN на КВМ с помощью соединительного кабеля аудио/видео, который прилагается к Вашей видеокамере. Установите селектор входного сигнала на КВМ в положение LINE.

Viewing the recording on TV

To connect to a TV without Video/Audio input jacks

Use a PAL system RFU adaptor (optional). Refer to the operating instructions of your TV and the RFU adaptor.

If your TV/VCR has a 21-pin connector (EUROCONNECTOR)

– CCD-TRV58E/TRV59E/TRV78E/TRV98E (European models only)
Use the 21-pin adaptor supplied with your camcorder.

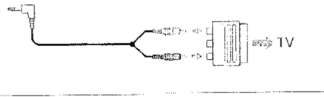
Просмотр записи на экране телевизора

Для подсоединения к Вашему телевизору без входных гнезд аудио/видео

Используйте ВЧ-адаптер системы PAL (приобретается отдельно).
Обратитесь к инструкции по эксплуатации Вашего телевизора и ВЧ-адаптера. При использовании ВЧ-адаптера звук будет монофоническим даже на стереофонических моделях.

Если в Вашем телевизоре/КВМ имеется 21-штырьковый разъем (EUROCONNECTOR)

– Только модели CCD-TRV58E/TRV59E/TRV78E/TRV98E (только европейские модели)
Используйте 21-штырьковый адаптер, прилагаемый к Вашей видеокамере.



If your TV has an S video jack
Connect using an S video cable (optional) to obtain high-quality pictures. With this connection, you do not need to connect the yellow (video) plug of the A/V connecting cable. Connect the S video cable (optional) to the S video jacks on both your camcorder and the TV.

Если в Вашем телевизоре имеется гнездо S видео
Выполните соединение с помощью кабеля S видео (не прилагается) для получения высококачественного изображения. При данном соединении Вам не нужно подсоединять желтый штекер (видео) соединительного кабеля аудио/видео. Подсоедините кабель S видео (не прилагается) к гнездам S видео на Вашей видеокамере и Вашем телевизоре.

— Advanced Recording Operation —

Using the wide mode

You can record a cinema-like picture (CINEMA) or a 16:9 wide picture to watch on the 16:9 wide screen TV (16:9FULL). Refer to the operating instructions of your TV.

CINEMA
Black bands appear on the screen during recording in the CINEMA mode **[a]**, playing back on a normal TV **[b]** or a wide-screen TV **[c]**. If you set the screen mode of the wide-screen TV to the zoom mode, a picture without black bands appears **[d]**.

16:9FULL
The picture during recording in the 16:9FULL mode **[e]**, or playing back on a normal TV **[f]** or a wide-screen TV **[g]** is horizontally compressed. If you set the screen mode of the wide-screen TV to the full mode, you can watch pictures of normal images **[h]**.

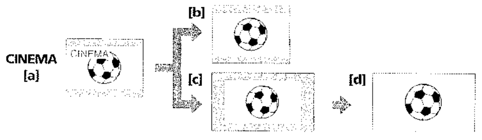
— Усовершенствованные операции съемки —

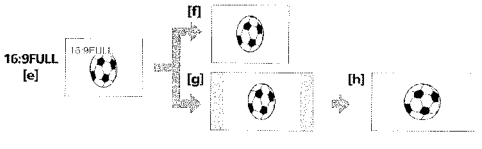
Использование широкоэкранного режима

Вы можете записывать изображение наподобие кино (CINEMA) или широкоэкранное изображение 16:9 для просмотра на широкоэкранном телевизоре 16:9 (16:9FULL). Обратитесь к инструкции по эксплуатации Вашего телевизора.

CINEMA
Черные полосы появятся на экране во время записи в режиме CINEMA **[a]**, воспроизведения на обычном телевизоре **[b]** или на широкоэкранном телевизоре **[c]**. Если Вы установите экранный режим на широкоэкранном телевизоре в режим масштабирования, то изображение появится без черных полос **[d]**.

16:9FULL
Изображение во время записи в режиме 16:9 FULL **[e]**, либо во время воспроизведения на обычном телевизоре **[f]** или широкоэкранном телевизоре **[g]** будет сжато по горизонтали. Если Вы установите экранный режим широкоэкранного телевизора в полноэкранный режим, Вы можете просматривать изображения обычных съемок **[h]**.



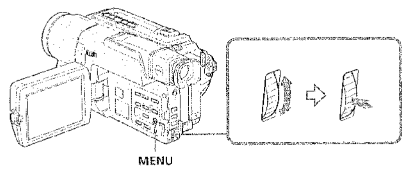


Using the wide mode

In CAMERA mode, set 16:9WIDE to CINEMA or 16:9FULL in 📷 in the menu settings (p. 69).

Использование широкоэкранного режима

В режиме CAMERA установите 16:9WIDE положение CINEMA или 16:9FULL в установках меню (стр. 74).



To cancel the wide mode

Set 16:9WIDE to OFF in the menu settings.

If the wide mode is set to 16:9FULL (CCD-TRV78E/TRV98E only)
The SteadyShot function does not work. If you select 16:9FULL in the menu settings when the SteadyShot function is working, 📷 flashes and the SteadyShot function does not function.

In the wide mode
You cannot select the bounce function with FADER.

Date or time indicator
When you record in the 16:9FULL mode, the date or time indicator will be widened on wide-screen TVs.

During recording
You cannot change or cancel the wide mode. When you cancel the wide mode, set your camcorder to the standby mode and then set 16:9WIDE to OFF in the menu settings.

Для отмены широкоэкранного режима

Установите команду 16:9WIDE в положение OFF в установках меню.

Если широкоэкранный режим установлен в положение 16:9FULL (Только модели CCD-TRV78E/TRV98E)
Функция устойчивой съемки не работает. Если Вы выберите команду 16:9FULL в установках меню в то время, когда работает функция устойчивой съемки, начнет мигать индикация "📷", и функция устойчивой съемки работать не будет.

В широкоэкранном режиме
Вы не можете выбрать функцию отскока с помощью кнопки FADER.

Индикатор даты или времени
Если Вы выполняете запись в режиме 16:9FULL, индикатор даты или времени расширится на широкоэкранном телевизоре.

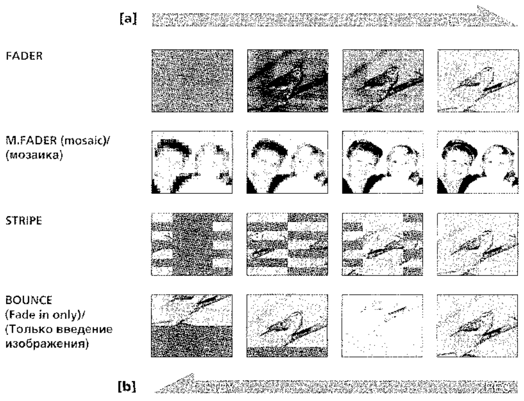
Во время записи
Вы не можете изменить или отменить широкоэкранный режим.
Для отмены широкоэкранного режима установите Вашу видеокамеру на режим ожидания, а затем установите 16:9WIDE на OFF в установках меню.

Using the fader function

You can fade in or out to give your recording a professional appearance.

Использование функции фейдера

Вы можете выполнять плавное введение и выведение изображения, чтобы придать Вашей съемке профессиональный вид.


[a]
FADER
M.FADER (mosaic)/ (мозаика)
STRIPE
BOUNCE (Fade in only)/ (Только введение изображения)
[b]

MONOTONE
When fading in, the picture gradually changes from black-and-white to colour.
When fading out, the picture gradually changes from colour to black-and-white.

MONOTONE
При введении изображение будет постепенно изменяться от черно-белого до цветного.
При выведении изображение будет постепенно изменяться от цветного до черно-белого.

Using the fader function

(1) When fading in [a]
In the standby mode, press FADER until the desired fader indicator flashes.
When fading out [b]
In the recording mode, press FADER until the desired fader indicator flashes.
The indicator changes as follows:

→ FADER → M.FADER → STRIPE →
no indicator ← MONOTONE ← BOUNCE ←

The last selected fader mode is indicated first of all.

(2) Press START/STOP. The fader indicator stops flashing.
After the fade in/out is carried out, your camcorder automatically returns to the normal mode.

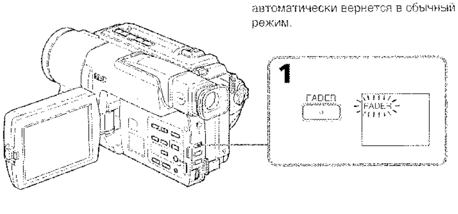
Использование функции фейдера

(1) При введении изображения [a]
В режиме ожидания, нажимайте кнопку FADER до тех пор, пока не начнет мигать нужный индикатор фейдера.
При выведении изображения [b]
В режиме записи, нажимайте кнопку FADER до тех пор, пока не начнет мигать нужный индикатор фейдера.
Индикатор будет изменяться следующим образом:

→ FADER → M.FADER → STRIPE →
без индикатора ← MONOTONE ← BOUNCE

Последний из выбранных режимов фейдера отображается первым.

(2) Нажмите кнопку START/STOP. Индикатор фейдера перестанет мигать.
После выполнения введения/выведения изображения Ваша видеокамера автоматически вернется в обычный режим.



To cancel the fader function

Before pressing START/STOP, press FADER until the indicator disappears.

Для отмены функции фейдера

Перед тем, как нажать кнопку START/STOP, нажимайте кнопку FADER до тех пор, пока не исчезнет индикатор.

Using the fader function

The date, time indicator and title do not fade in or fade out
Erase them before operating the fader function if they are not needed.

While using the bounce function, you cannot use the following functions:
- Focus
- Zoom
- Picture effect

Note on the bounce function
The BOUNCE indicator does not appear in the following mode or functions:
- D ZOOM is set to the mode other than OFF in the menu settings
- Wide mode
- Picture effect
- PROGRAM AE

Использование функции фейдера

Индикатор даты, времени и титр не вводятся и не выводятся вместе с изображением
Удалите их перед тем, как включить функцию фейдера, если они не нужны.

Во время использования функции перескакивания Вы не можете использовать следующие функции:
- Фокусировка
- Трансфокация
- Эффект изображения

Примечание по функции перескакивания
Индикатор BOUNCE не появляется в следующих режимах или при использовании следующих функций:
- Команда D ZOOM установлена в положение, отличное от положения OFF в установках меню
- Широкоэкранный режим
- Эффект изображения
- PROGRAM AE

Using special effects – Picture effect

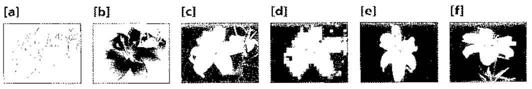
You can digitally process images to obtain special effects like those in films or on the TV.

PASTEL [a] : The contrast of the picture is emphasized, and the picture looks like an animated cartoon.
NEG. ART [b] : The colour and brightness of the picture are reversed.
SEPIA : The picture is sepia.
B&W : The picture is monochrome (black and white).
SOLARIZE [c] : The light intensity is clearer, and the picture looks like an illustration.
MOSAIC [d] : The picture is mosaic.
SLIM [e] : The picture expands vertically.
STRETCH [f] : The picture expands horizontally.

Использование специальных эффектов – Эффект изображения

Вы можете выполнять обработку изображения цифровым методом для получения специальных эффектов, как в кинофильмах или на экранах телевизоров.

PASTEL [a] : Подчеркивается контрастность изображения, которому придается мультипликационный вид.
NEG. ART [b] : Цвет и яркость изображения будут негативными.
SEPIA : Изображение будет в цвете сепии.
B&W : Изображение будет монохроматическим (черно-белым).
SOLARIZE [c] : Яркость света будет усиленной, а изображение будет выглядеть как иллюстрация.
MOSAIC [d] : Изображение будет мозаическим.
SLIM [e] : Изображение растянется по вертикали.
STRETCH [f] : Изображение растянется по горизонтали.

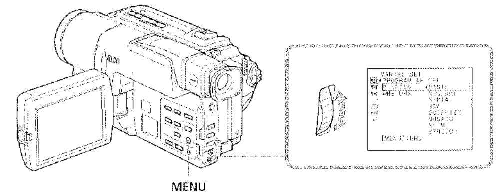


Using special effects – Picture effect

(1) In CAMERA mode, select P EFFECT in 🅼 in the menu settings. (p. 69).
(2) Select the desired picture effect mode in the menu settings, then press the SEL/PUSH EXEC dial.

Использование специальных эффектов – Эффект изображения

(1) В режиме CAMERA выберите пункт P EFFECT в разделе 🅼 в установках меню. (стр. 74).
(2) Выберите нужный режим эффекта изображения в установках меню, затем нажмите диск SEL/PUSH EXEC.



To turn the picture effect function off

Set P EFFECT to OFF in the menu settings.

Для выключения функции эффекта изображения

Установите пункт P EFFECT в установках меню в положение OFF.

When you turn the power off

Your camcorder automatically returns to the normal mode.

Если Вы выключите питание

Ваша видеокамера автоматически вернется в обычный режим.

Using the PROGRAM AE function

You can select PROGRAM AE (Auto Exposure) mode to suit your specific shooting requirements.

Spotlight

This mode prevents people's faces, for example, from appearing excessively white when shooting subjects lit by strong light in the theatre.

Soft portrait

This mode brings out the subject while creating a soft background for subjects such as people or flowers.

Sports lesson

This mode minimizes shake on fast-moving subjects such as in tennis or golf.

Beach & ski

This mode prevents people's faces from appearing dark in strong light or reflected light, such as at a beach in midsummer or on a ski slope.

Sunset & moon

This mode allows you to maintain atmosphere when you are recording sunsets, general night views, fireworks displays and neon signs.

Landscape

This mode is for when you are recording distant subjects such as mountains and prevents your camcorder from focusing on glass or metal mesh in windows when you are recording a subject behind glass or a screen.

Использование функции PROGRAM AE

Вы можете выбрать режим PROGRAM AE (автоматическая съемка) в соответствии со специфическими требованиями к съемке.

Прожекторное освещение

Данный режим предотвращает, к примеру, лица людей от появления в чрезмерно белом свете при выполнении съемки людей, освещенных сильным светом на свадебных церемониях или в театре.

Мягкий портрет

Этот режим позволяет выделить объект на фоне мягкого фона, и подходит для съемки, например, людей или цветов.

Спортивные состязания

Этот режим позволяет минимизировать дрожание при съемке быстро движущихся предметов, например, при игре в теннис или гольф.

Пляжный и лыжный курорт

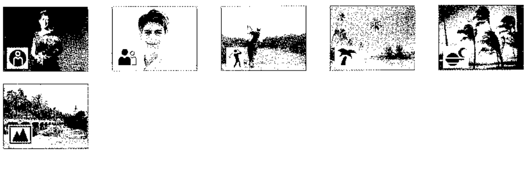
Этот режим предотвращает появление темных лиц людей в зоне сильного света или отраженного света, например, на пляже в разгар лета или на снежном склоне.

Заход солнца и луны

Этот режим позволяет в точности отражать обстановку при съемке заходов солнца, общих ночных видов, фейерверков и неоновых реклам.

Ландшафт

Этот режим позволяет выполнять съемку отдаленных объектов, таких как горы, например, и предотвращает фокусировку видеокамеры на стекло или металлическую решетку на окнах, когда Вы выполняете запись объектов позади стекла или решетки.

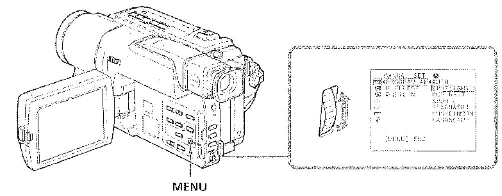


Using the PROGRAM AE function

(1) In CAMERA mode, select PROGRAM AE in 🅼 in the menu settings (p. 69).
(2) Select the desired PROGRAM AE mode in the menu settings, then press the SEL/PUSH EXEC dial.

Использование функции PROGRAM AE

(1) В режиме CAMERA выберите пункт PROGRAM AE в разделе 🅼 в установках меню. (стр. 74).
(2) Выберите нужный режим PROGRAM AE в установках меню, затем нажмите диск SEL/PUSH EXEC.



To turn the PROGRAM AE function off

Set PROGRAM AE to AUTO in the menu settings.

Для выключения функции PROGRAM AE

Установите пункт PROGRAM AE в установках меню в положение AUTO.

Using the PROGRAM AE function

Notes
- In the spotlight, sports lesson and beach & ski modes, you cannot take close-ups. This is because your camcorder is set to focus only on subjects in the middle to far distance.
- In the sunset & moon and landscape modes, your camcorder is set to focus only on distant subjects.
- The bounce function with FADER does not work in the PROGRAM AE mode.
- While setting NIGHTSHOT to ON, the PROGRAM AE function does not work. (The indicator flashes.)

If you are recording under a discharge tube such as a fluorescent lamp, sodium lamp or mercury lamp

Flickering or changes in colour may occur in the following modes. If this happens, turn the PROGRAM AE function off.
- Soft portrait mode
- Sports lesson mode

Использование функции PROGRAM AE

Примечания
- В режимах прожекторного освещения, спортивных состязаний, а также в пляжном и лыжном режиме Вы можете выполнять съемку крупным планом. Это объясняется тем, что Ваша видеокамера настроена для фокусировки только на объекты, находящиеся на среднем и дальнем расстояниях.
- В режиме захода солнца и луны, а также в ландшафтном режиме Ваша видеокамера настроена на фокусировку только на дальние объекты.
- Функция перескакивания с функцией FADER не работают в режиме PROGRAM AE.
- При установке переключателя NIGHTSHOT в положение ON функция PROGRAM AE не будет работать. (Индикатор мигает)

Если Вы выполняете запись при использовании газоразрядной лампы, натриевой лампы или ртутной лампы

В следующих режимах может возникнуть мерцание или неустойчивые процессы. Если это произойдет, выключите функцию PROGRAM AE.
- Мягкий портретный режим
- Режим спортивных состязаний

Adjusting the exposure manually

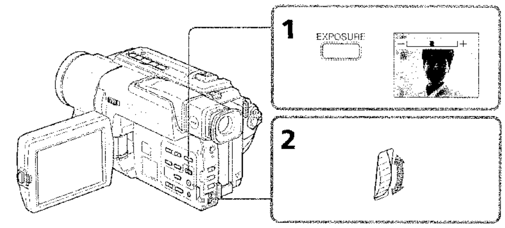
You can manually adjust and set the exposure. Adjust the exposure manually in the following cases:
- The subject is backlit
- Bright subject and dark background
- To record dark pictures (e.g. night scenes) faithfully

(1) In CAMERA mode, press EXPOSURE. The exposure indicator appears.
(2) Turn the SEL/PUSH EXEC dial to adjust the brightness.

Регулировка экспозиции вручную

Вы можете отрегулировать и установить экспозицию вручную.
Отрегулируйте экспозицию вручную в следующих случаях:
- Объект на фоне задней подсветки
- Яркий объект на темном фоне
- Для записи темных изображений (например, ночных сцен) с большой достоверностью

(1) Нажмите кнопку EXPOSURE в режиме CAMERA. Появится индикатор экспозиции.
(2) Поверните диск SEL/PUSH EXEC для регулировки яркости.



To return to the automatic exposure mode

Press EXPOSURE again.

Для возврата в режим автоматической экспозиции

Нажмите кнопку EXPOSURE еще раз.

Note

When you adjust the exposure manually, the backlight function does not work.

Your camcorder automatically returns to the automatic exposure mode:
- if you change the PROGRAM AE mode
- if you slide NIGHTSHOT to ON

Примечание

При выполнении регулировки экспозиции вручную функция задней подсветки не работает.

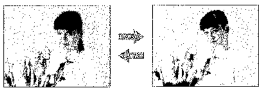
Ваша видеокамера автоматически вернется в режим автоматической экспозиции:
- если Вы измените режим PROGRAM AE
- если Вы передвинете переключатель NIGHTSHOT в положение ON

Focusing manually

You can gain better results by manually adjusting the focus in the following cases:
- The autofocus mode is not effective when shooting
  - subjects through glass coated with water droplets
  - horizontal stripes
  - subjects with little contrast with backgrounds such as walls and sky
- When you want to change the focus from a subject in the foreground to a subject in the background
- Shooting a stationary subject when using a tripod

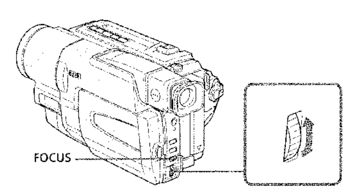
Фокусировка вручную

Вы можете получить лучшие результаты путем регулировки вручную в следующих случаях:
- Режим автоматической фокусировки является неэффективным при выполнении съемки
  - объектов через стекло, покрытое каплями воды
  - горизонтальных полос
  - объектов с малой контрастностью на таком фоне, как стена или небо
- Если Вы хотите выполнить изменение фокусировки с объекта на переднем плане на объект на заднем плане
- При выполнении съемки стационарных объектов с использованием треноги



(1) In CAMERA mode, press FOCUS. The Ⓕ indicator appears.
(2) Turn the SEL/PUSH EXEC dial to sharpen focus.

(1) Нажмите кнопку FOCUS в режиме CAMERA. Появится индикатор Ⓕ.
(2) Поверните диск SEL/PUSH EXEC для получения четкой фокусировки.



To return to the autofocus mode

Press FOCUS.

Для возвращения в режим автоматической фокусировки

Нажмите кнопку FOCUS.

Focusing manually

To focus precisely

Adjust the zoom by first focusing at the "T" (telephoto) position and then shooting at the "W" (wide-angle) positon. This makes focusing easier.

When you shoot close to the subject

Focus at the end of the "W" (wide-angle) position.

Ⓕ changes to the following indicators:

▲ When recording a distant subject.
● When the subject is too close to focus on.

Фокусировка вручную

Для точной фокусировки

Отрегулируйте вариообъектив, сначала выполнив фокусировку в положении "T" (телефото), а затем выполнив съемку в положении "W" (широкого угла охвата). Это упростит фокусировку.

Если Вы выполняете съемку вблизи объекта

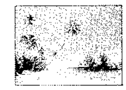
Выполните фокусировку в конце положения "W" (широкоугольное).

Индикатор Ⓕ будет изменяться на следующие индикаторы:

▲ при записи удаленного объекта.
● при записи объекта, расположенного слишком близко к фокусу.

Superimposing a title

You can select one of eight preset titles and two custom titles (p. 59). You can also select the language, colour, size and position of titles.

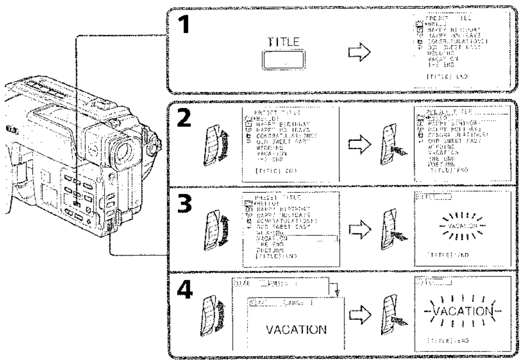


(1) In CAMERA mode, press TITLE to display the title menu.
(2) Turn the SEL/PUSH EXEC dial to select 🄲, then press the dial.
(3) Select the desired title in the menu settings, then press the SEL/PUSH EXEC dial.
(4) Change the colour, size, or position, if necessary.
  ① Turn the SEL/PUSH EXEC dial to select the colour, size, or position, then press the dial. The item appears.
  ② Turn the SEL/PUSH EXEC dial to select the desired item, then press the dial.
  ③ Repeat steps ① and ② until the title is laid out as desired.
(5) Press the SEL/PUSH EXEC dial again to complete the setting.
(6) Press START/STOP to start recording.
(7) When you want to stop recording the title, press TITLE.

Наложение титра

Вы можете выбрать один из восьми предварительно установленных титров и два созданных Вами титра (стр. 59). Вы можете также выбрать язык, цвет, размер и положение титров.

(1) В режиме CAMERA, нажмите кнопку TITLE для отображения меню титров.
(2) Поверните диск SEL/PUSH EXEC для выбора индикации 🄲, а затем нажмите диск.
(3) Выберите нужный титр в установках меню, затем нажмите диск SEL/PUSH EXEC.
(4) Измените цвет, размер или положение титра, если нужно.
  ① Поверните диск SEL/PUSH EXEC для выбора цвета, размера или положения титра, а затем нажмите диск. Появится нужный пункт.
  ② Поверните диск SEL/PUSH EXEC для выбора нужного пункта, а затем нажмите диск.
  ③ Повторяйте пункты ① и ② до тех пор, пока титр не будет расположен, как нужно.
(5) Нажмите диск SEL/PUSH EXEC еще раз для завершения установки.
(6) Нажмите кнопку START/STOP для начала записи.
(7) Если Вы хотите остановить запись титра, нажмите кнопку TITLE.



Superimposing a title

To superimpose the title while you are recording

Press TITLE while you are recording, and carry out steps 2 to 5. When you press the SEL/PUSH EXEC dial at step 5, the title is superimposed.

To select the language of a preset title

If you want to change the language, select [🄰] before step 2. Then select the desired language and return to step 2.

Note

Both the date and time or either of them may not be displayed depending on the size or position of the title.

If you display the menu or title menu while superimposing a title

The title is not recorded while the menu or title menu is displayed.

To use the custom title

If you want to use the custom title, select 🄲 in step 2.

Title setting

- The title colour changes as follows :
  WHITE ←→ YELLOW ←→ VIOLET ←→ RED ←→ CYAN ←→ GREEN ←→ BLUE
- The title size changes as follows :
  SMALL ←→ LARGE
  You cannot input 13 characters or more in LARGE size.
- The title position changes as follows :
  1 ←→ 2 ←→ 3 ←→ 4 ←→ 5 ←→ 6 ←→ 7 ←→ 8 ←→ 9
  The larger the position number, the lower the title is positioned.
  When you select the title size "LARGE", you cannot choose position 9.
  When you select the title size "LARGE" in the CINEMA mode, you cannot choose position 8 nor 9.

When you are selecting and setting the title

You cannot superimpose the title displayed on the screen.

When you superimpose a title while you are recording

The beep does not sound.

Наложение титра

Для наложения титра во время записи

Нажмите кнопку TITLE во время записи и выполните действия пунктов со 2 по 5. Если Вы нажмете кнопку SEL/PUSH EXEC в пункте 5, титр будет наложен на изображение.

Для выбора языка предварительно установленного титра

Если Вы хотите изменить язык, выберите индикацию [🄰] перед выполнением действия пункта 2. Затем выберите нужный язык и вернитесь к пункту 2.

Примечание

Индикация даты и времени или же одна из них не могут отображаться на дисплее в зависимости от размера или положения титра.

Если на дисплее отображается меню или меню титров во время наложения титра

Титр не записывается во время отображения на дисплее меню или меню титров.

Для использования созданного Вами титра

Если Вы хотите использовать созданный Вами титр, выберите индикацию 🄲 в пункте 2.

Установка титра

- Цвет титра изменяется следующим образом:
  WHITE (БЕЛЫЙ) ←→ YELLOW (ЖЕЛТЫЙ) ←→ VIOLET (ФИОЛЕТОВЫЙ) ←→ RED (КРАСНЫЙ) ←→ CYAN (ГОЛУБОЙ) ←→ GREEN (ЗЕЛЕНЫЙ) ←→ BLUE (СИНИЙ)
- Размер титра изменяется следующим образом:
  SMALL (МАЛЕНЬКИЙ) ←→ LARGE (БОЛЬШОЙ)
  Вы не можете ввести 13 знаков или более при размере LARGE.
- Положение титра изменяется следующим образом:
  1 ←→ 2 ←→ 3 ←→ 4 ←→ 5 ←→ 6 ←→ 7 ←→ 8 ←→ 9
  Чем больше номер положения титра, тем ниже будет расположен титр.
  Если Вы выберите размер "LARGE", Вы не сможете изменять положения 9.
  Если Вы выберите размер титра "LARGE" в режиме CINEMA, Вы не сможете выбрать ни положение 8, ни положение 9.

Во время выбора и установки титра

Вы не можете налагать на изображение титр, отображаемый на экране.

При наложении титра во время записи

Зуммерного сигнала не будет.

Making your own titles

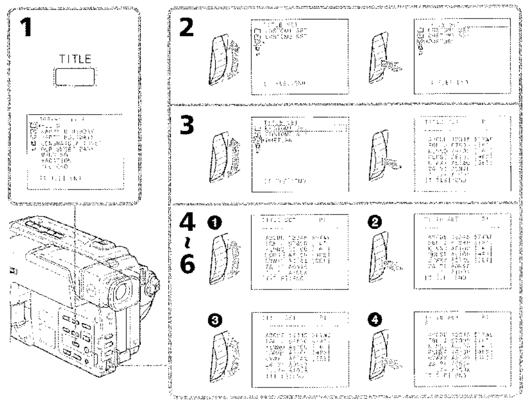
You can make up to two titles and store them in your camcorder. Each title can have up to 20 characters.

(1) In CAMERA or PLAYER mode, press TITLE.
(2) Turn the SEL/PUSH EXEC dial to select 🄿, then press the dial.
(3) Turn the SEL/PUSH EXEC dial to select the first line (CUSTOM1 SET) or second line (CUSTOM2 SET), then press the dial.
(4) Turn the SEL/PUSH EXEC dial to select the column of the desired character, then press the dial.
(5) Turn the SEL/PUSH EXEC dial to select the desired character, then press the dial.
(6) Repeat steps 4 and 5 until you have selected all characters and completed the title.
(7) To finish making your own titles, turn the SEL/PUSH EXEC dial to select [SET], then press the dial. The title is stored in memory.
(8) Press TITLE to make the title menu disappear.

Создание своих собственных титров

Вы можете создать два собственных титра и хранить их в памяти видеокамеры. Каждый титр может состоять из 20 символов.

(1) В режиме CAMERA или PLAYER, нажмите кнопку TITLE.
(2) Поверните диск SEL/PUSH EXEC для выбора индикации 🄿, а затем нажмите диск.
(3) Поверните диск SEL/PUSH EXEC для выбора первой строки (CUSTOM1 SET) или второй строки (CUSTOM2 SET), а затем нажмите диск.
(4) Поверните диск SEL/PUSH EXEC для выбора колонки с нужным символом, а затем нажмите диск.
(5) Повернитe диск SEL/PUSH EXEC нужного символа, а затем нажмите диск.
(6) Повторяйте действия пунктов 4 и 5 до тех пор, пока не выберите все символы и не составите полностью титр.
(7) Для завершения создания своих собственных титров поверните диск SEL/PUSH EXEC для выбора команды [SET], а затем нажмите диск. Титр будет занесен в память.
(8) Нажмите кнопку TITLE, чтобы меню титров исчезло.



Making your own titles

To change a title you have stored

In step 3, select CUSTOM1 SET or CUSTOM2 SET, depending on which title you want to change, then press the SEL/PUSH EXEC dial. Turn the SEL/PUSH EXEC dial to select [←], then press the dial to delete the title. The last character is erased. Enter the new title as desired.

If you take 5 minutes or longer to enter characters in the standby mode while a cassette is in your camcorder

The power automatically turns off. The characters you have entered remain stored in memory. Set the POWER switch to OFF (CHARGE) once, and turn it to CAMERA again, then proceed from step 1.
We recommend setting the POWER switch to PLAYER or removing the cassette so that your camcorder does not automatically turn off while you are entering title characters.

If you select [→P2]

The menu for selecting alphabet and Russian characters appears. Select [→P1] to return to the previous screen.

To delete the title

Select [←]. The last character is erased.

To enter a space

Select [Z& ? !], then select the blank part.

Создание своих собственных титров

Для изменения сохраненного в памяти титра

В пункте 3, выберите команду CUSTOM1 SET или CUSTOM2 SET в зависимости от того, какой титр Вы хотите изменить, а затем нажмите диск SEL/PUSH EXEC. Поверните диск SEL/PUSH EXEC для выбора индикации [←], а затем нажмите диск для удаления титра. Последний символ будет удален. Введите новый нужный символ.

Если при вводе символов пройдет 5 минут или более в режиме ожидания при вставленной кассете в Вашу видеокамеру

Питание автоматически выключится. Введенные символы будут сохранены в памяти. Установите переключатель POWER сначала в положение OFF (CHARGE), снова верните его в положение CAMERA, а затем продолжите с пункта 1.
Рекомендуется установить переключатель POWER в положение PLAYER или вынуть кассету, чтобы Ваша видеокамера автоматически не выключалась при вводе символов титра.

Если Вы выбрали команду [→P2]

Появится меню для выбора алфавита и русских букв. Выберите команду [→P1], чтобы вернуться к предыдущему экрану.

Для удаления титра

Выберите команду [←]. Последний символ будет удален.

Для ввода пробела

Нажмите клавиши [Z& ? !], а затем выберите чистую часть.

Using the built-in light

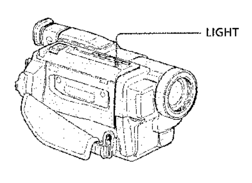
You can use the built-in light to suit your shooting situation. The recommended distance between the subject and camcorder is about 1.5 m (5 feet).

Press LIGHT until the ON indicator appears on the screen while your camcorder is in CAMERA mode. The built-in light turns on. If you turn the POWER switch to OFF (CHARGE), the built-in light turns off simultaneously. You cannot turn the built-in light on by turning the POWER switch to CAMERA again. To turn on the built-in light again, press LIGHT again in CAMERA mode.

Использование встроенной подсветки

Вы можете использовать встроенную подсветку в соответствии с условиями съемки. Рекомендуемое расстояние между объектом и видеокамерой равно около 1,5 м.

Нажимайте кнопку LIGHT в то время, когда видеокамера находится в режиме CAMERA до тех пор, пока индикатор ON не появится на экране. Высветится встроенная подсветка. Если Вы повернете переключатель POWER в положение OFF (CHARGE), встроенная подсветка одновременно погаснет. Вы не сможете включить встроенную подсветку, снова повернув переключатель POWER в положение CAMERA. Для включения встроенной подсветки, нажмите снова кнопку LIGHT в режиме CAMERA.



To turn off the built-in light

Press LIGHT until no indicator appears on the screen.

To turn on the built-in light automatically

Press LIGHT until the AUTO indicator appears on the screen.
The built-in light automatically turns on and off according to the ambient brightness.

Для выключения встроенной подсветки

Нажимайте кнопку LIGHT до тех пор, пока на экране не останется никакого индикатора.

Для автоматического включения встроенной подсветки

Нажимайте кнопку LIGHT до тех пор, пока индикатор AUTO появится на экране.
Встроенная подсветка будет автоматически включаться и выключаться в соответствии с яркостью окружающей среды.

Using the built-in light

CAUTION

Be careful not to touch the lighting section, because the plastic window and surrounding surfaces are hot while the light is on. It remains hot for a while after the light is turned off.

DANGER

Not to be handled by children.
Emits intense heat and light.
Use with caution to reduce the risk of fire or injury to persons.
Do not directly light at persons or materials from less than 1.22 m (4 feet) during use and until cool.
Turn the built-in light off when not in use.

When you press LIGHT

The indicator changes as follows.

→ AUTO → ON → no indicator

Notes

- The built-in light turns off automatically in the following cases:
  - When it stays on in the AUTO mode for more than 5 minutes.
  - When you leave it on for more than 5 minutes with no cassette inserted or after the tape has run out.

  To turn the built-in light on again, press LIGHT again.
- The battery pack is quickly discharging while the built-in light is turned on. Turn it off when not in use.
- When you do not use your camcorder, turn the built-in light off and remove the battery pack to avoid turning on the built-in light accidentally.
- When flickering occurs while shooting in the AUTO mode, press LIGHT until the ON indicator appears.
- The built-in light may turn on/off when you use the PROGRAM AE or backlight function while shooting in the AUTO mode.

Использование встроенной подсветки

ВНИМАНИЕ

Будьте осторожны, чтобы не прикасаться к секции подсветки, поскольку пластмассовое окно и прилегающая поверхность являются горячими при включенной подсветке. Эта секция будет оставаться горячей и некоторое время после выключения подсветки.

ОСТОРОЖНО

Детям пользоваться аппаратом запрещено. Он излучает сильное тепло и свет.
Соблюдайте осторожность, чтобы не допустить случайного воспламенения предметов и не травмировать людей вокруг.
Не направляйте подсветку на людей или материалы с расстояния менее 1,22 м во время пользования аппаратом и до его остывания.
Выключите встроенную подсветку, если аппарат не используется.

При нажатии кнопки LIGHT

Индикатор изменяется, как

→ AUTO → ON → индикатора нет

Примечания

- Встроенная подсветка выключается автоматически в следующих случаях:
  - Если она остается включенной в режиме AUTO более, чем на 5 минут.
  - Если Вы оставляете ее включенной более чем на 5 минут, когда кассета не установлена или достигнут конец ленты.

  Чтобы включить встроенную подсветку снова, нажмите кнопку LIGHT еще раз.
- Батарейный блок быстро разряжается при включенной подсветке. Выключите ее, если аппарат не используется.
- Если Вы не используете Вашу видеокамеру, выключите встроенную подсветку и снимите батарейный блок во избежание случайного включения встроенной подсветки.
- В случае появления мерцания во время съемки в режиме AUTO нажимайте кнопку LIGHT, пока не появится индикатор ON.
- Встроенная подсветка может включаться/выключаться при использовании функции PROGRAM AE или функции задней подсветки во время съемки в AUTO режиме.

Using the built-in light

- The built-in light may be turned off when inserting or ejecting a cassette.
- While the end search function is working, the built-in light is turned off.
- When you use the conversion lens (optional) light from the built-in light is blocked and may not illuminate the subject properly.

Replacing the bulb

Use the Sony XB-3D halogen lamp (optional).
The supplied halogen lamp is not on the market. Purchase the Sony XB-3D halogen lamp.
Remove the power source before replacing the bulb.

(1) Remove the built-in light unit while pushing the hole under the built-in light unit using a wire.
(2) Turn the bulb housing counterclockwise and detach from the built-in light unit.
(3) Replace the bulb using a dry cloth.
(4) Attach the bulb housing turning it clockwise, then replace the built-in light unit.

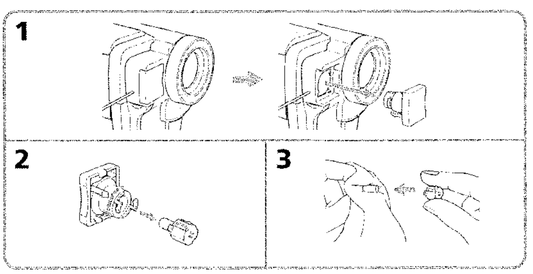
Использование встроенной подсветки

- Встроенная подсветка может выключаться при установке или извлечении кассеты.
- При использовании функции поиска конца записи на ленте встроенная подсветка выключается.
- Если Вы используете преобразовательный объектив (приобретается отдельно), лампа встроенной подсветки блокируется и может не обеспечивать освещение объекта надлежащим образом.

Замена лампы накаливания

Используйте галогенную лампу Sony XB-3D (приобретается отдельно). Прилагаемая галогенная лампа не поступает в розничную продажу. Приобретите галогенную лампу Sony XB-3D.
Перед заменой лампы накаливания выньте источник питания.

(1) Выньте встроенное устройство подсветки, нажав на отверстие под встроенным устройством с помощью проволоки.
(2) Поверните корпус лампы накаливания против часовой стрелки и отсоедините лампу от встроенного устройства подсветки.
(3) Отсоедините лампу накаливания с помощью сухой ткани.
(4) Прикрепите корпус лампы накаливания, повернув его по часовой стрелке, и замените встроенное устройство подсветки.



Using the built-in light

CAUTION

- When replacing the bulb, use only the Sony XB-3D halogen lamp (optional) to reduce the risk of fire.
- To prevent possible burn hazard, disconnect the power source before replacing and do not touch the bulb until the bulb becomes cool enough to handle (for about 30 minutes or more).

Note

To prevent the bulb from being smudged with finger prints, handle it with a dry cloth, etc. If the bulb is smudged, wipe it completely.

Использование встроенной подсветки

ВНИМАНИЕ

- При замене лампы накаливания используйте только галогенную лампу Sony XB-3D (приобретается отдельно) для уменьшения вероятности воспламенения.
- Для предотвращения опасности получения ожога, отсоедините источник питания перед тем, как заменить лампу накаливания, и не прикасайтесь к лампе до тех пор, пока она достаточно не остынет (около 30 минут или более).

Примечание

Для предотвращения загрязнения лампы накаливания от отпечатков пальцев обращайтесь с ней осторожно, используя сухую ткань. В случае загрязнения лампы накаливания тщательно протрите ее.

Dubbing a tape

Using the A/V connecting cable

Connect your camcorder to the VCR using the A/V connecting cable supplied with your camcorder.
You can record and edit a picture with the connected VCR by using your camcorder as a player.
Make the indicators disappear by pressing DISPLAY . If you do not make the indicators disappear, they are recorded on tapes.

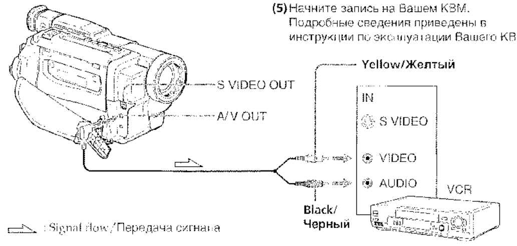
(1) Insert a blank tape (or a tape you want to record over) into the VCR, and insert the recorded tape into your camcorder.
(2) Set the input selector on the VCR to LINE. Refer to the operating instructions of your VCR for more information.
(3) Set the POWER switch to PLAYER.
(4) Play back the recorded tape on your camcorder.
(5) Start recording on the VCR. Refer to the operating instructions of your VCR for more information.

Перезапись ленты

Использование соединительного шнура аудио/видео

Подсоедините Вашу видеокамеру к КВМ с помощью соединительного кабеля аудио/видео, который прилагается к Вашей видеокамере.
Вы можете записывать и монтировать изображение на присоединенном КВМ, используя Вашу видеокамеру в качестве плейера.
Отключите индикаторы, нажав кнопку DISPLAY. Если Вы не отключите индикаторы, они будут записаны на ленте.

(1) Вставьте незаписанную ленту (или ленту, на которую Вы хотите выполнить запись) в КВМ и вставьте записанную ленту в Вашу видеокамеру.
(2) Установите селектор входного сигнала на КВМ в положение LINE. Подробные сведения приведены в инструкции по эксплуатации Вашего КВМ.
(3) Установите переключатель POWER в положение PLAYER.
(4) Начните воспроизведение записанной ленты на Вашей видеокамере.
(5) Начните запись на Вашем КВМ. Подробные сведения приведены в инструкции по эксплуатации Вашего КВМ.



: Signal flow/Передача сигнала

When you have finished dubbing a tape

Press ■ on both your camcorder and the VCR.

To prevent deterioration of pictures when dubbing

Set EDIT to ON in the menu settings before dubbing.

Если Вы закончили перезапись ленты

Нажмите кнопку ■ как на видеокамере, так и на КВМ.

Для предотвращения ухудшения изображения при перезаписи

Перед выполнением перезаписи установите переключатель EDIT в положение ON в установках меню.

Dubbing a tape

You can edit on VCRs that support the following systems
8 mm, Hi8 Hi8, Digital8, VHS VHS, S-VHS S-VHS, VHSC VHSC, S-VHSC S-VHSC, Betamax, mini DV mini DV or DV DV

Connect using an S video cable (optional) to obtain high-quality pictures

With this connection, you do not need to connect the yellow (video) plug of the A/V connecting cable.
Connect an S video cable (optional) to the S video jacks of both your camcoder and the VCR.

Перезапись ленты

Вы можете выполнять монтаж на КВМ, которые поддерживают следующие системы
8 мм, Hi8 Hi8, Digital8, VHS VHS, S-VHS S-VHS, VHSC VHSC, S-VHSC S-VHSC, Betamax, mini DV mini DV или DV DV

Выполните подсоединение с помощью кабеля S видео (не прилагается) для получения высококачественных изображений

При таком подсоединении Вам не нужно подсоединять желтый (видео) штекер соединительного кабеля аудио/видео.
Подсоедините кабель S видео (не прилагается) к гнездам S видео на Вашей видеокамере и КВМ.

Changing the menu settings

To change the mode settings in the menu settings, select the menu items with the SEL / PUSH EXEC dial. The default settings can be partially changed. First, select the icon, then the menu item and then the mode.

(1) In CAMERA or PLAYER mode, press MENU.
(2) Turn the SEL/PUSH EXEC dial to select the desired icon, then press the dial to set.
(3) Turn the SEL/PUSH EXEC dial to select the desired item, then press the dial to set.
(4) Turn the SEL/PUSH EXEC dial to select the desired mode, and press the dial to set.
(5) If you want to change other items, select ⮐ RETURN and press the dial, then repeat steps from 2 to 4.
For details, see "Selecting the mode setting of each item"(p. 69).

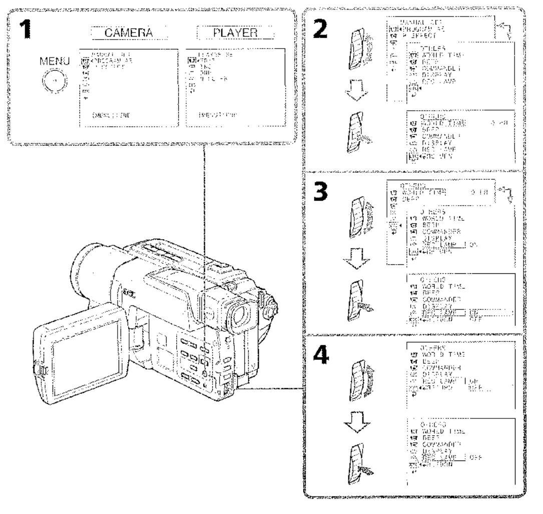
Изменение установок меню

Для изменения установок режима в установках меню выберите пункты меню с помощью диска SEL/PUSH EXEC. Установки по умолчанию могут быть частично изменены. Сначала выберите пиктограмму, затем пункт меню, а затем режим.

(1) В режиме CAMERA или режиме PLAYER нажмите кнопку MENU.
(2) Поверните диск SEL/PUSH EXEC для выбора нужной пиктограммы, а затем нажмите диск для установки.
(3) Поверните диск SEL/PUSH EXEC для выбора нужной пиктограммы, а затем нажмите диск для установки.
(4) Поверните диск SEL/PUSH EXEC для выбора нужной пиктограммы, а затем нажмите диск для установки.
(5) Если Вы хотите изменить другие пункты, выберите команду ⮐ RETURN, а затем нажмите диск, после чего повторите действия пунктов со 2 по 4.
Подробные сведения приведены в разделе "Выбор установок режима по каждому пункту" (стр. 74)

Changing the menu settings

Изменение установок меню



To make the menu display disappear

Press MENU.

Для того, чтобы исчезла индикация меню

Нажмите кнопку MENU.

Menu items are displayed as the following icons:

- MANUAL SET
- CAMERA SET
- PLAYER SET
- LCD SET
- TAPE SET
- SETUP MENU
- OTHERS

Depending on your camcorder model

The menu display may be different from that in this illustration.

Пункты меню отображаются в виде шести, приведенных ниже, пиктограмм:

- MANUAL SET
- CAMERA SET
- PLAYER SET
- LCD SET
- TAPE SET
- SETUP MENU
- OTHERS

В зависимость от модели Вашей видеокамеры

Меню индикации может отличаться от указанной на рисунке.

English

Selecting the mode setting of each item

● is the default setting.

Menu items differ according to the position of the POWER switch.
The screen shows only the items you can operate at the moment.

Icon/item	Mode	Meaning	POWER switch
PROGRAM AE	——	To suit your specific shooting requirement (p. 51)	CAMERA
P EFFECT	———	To add special effects like those in films or on the TV to images (p. 49).	CAMERA
D ZOOM	● OFF	If you set to OFF, digital zoom is deactivated and up to 20× is carried out.	CAMERA
	40× 450×	If you set to 40×/450×, digital zoom is activated and more than 20× to 40×/450× is performed digitally. (p. 30) (CCD-TRV49E only)	
	● OFF	If you set to OFF, digital zoom is deactivated and up to 20× is carried out.	
	40× 460×	If you set to 40×/460×, digital zoom is activated and more than 20× to 40×/460× is performed digitally. (p. 30) (CCD-TRV58E only)	
	● OFF	If you set to OFF, digital zoom is deactivated and up to 20× is carried out.	
	40× 560×	If you set to 40×/560×, digital zoom is activated and more than 20× to 40×/560× is performed digitally. (p. 30) (CCD-TRV59E/TRV78E/TRV98E only)	
16:9WIDE	● OFF	——	CAMERA
	CINEMA	To record in the CINEMA mode (p. 44)	
	16:9FULL	To record in the 16:9FULL mode	
STEADYSHOT*	● ON	To compensate for camera-shake	CAMERA
	OFF	To cancel the SteadyShot function. Natural pictures are produced when shooting a stationary object with a tripod.	
N.S. LIGHT	● ON	To use the NightShot Light function (p. 34)	CAMERA
	OFF	To cancel the NightShot Light function	

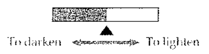
* CCD-TRV78E/TRV98E only

Icon/item	Mode	Meaning	POWER switch
EDIT	● OFF		PLAYER
	ON	To minimize picture deterioration when editing	
TBC	● ON	To correct jitter	PLAYER
	OFF	To not correct jitter. Set TBC to OFF when playing back a tape on which you have dubbed over and recorded the signal of a TV game or similar machine.	

TBC stands for "Time Base Corrector".

Icon/item	Mode	Meaning	POWER switch
DNR	● ON	To reduce picture noise	PLAYER
	OFF	To reduce a conspicuous afterimage when the picture has a lot of movement	

DNR stands for "Digital Noise Reduction".

Icon/item	Mode	Meaning	POWER switch
NTSC PB	● ON PAL TV	To play back a tape recorded in the NTSC colour system on a PAL system TV	PLAYER
	NTSC 4.43	To play back a tape recorded in the NTSC colour system on a TV with the NTSC 4.43 mode	
LCD BRIGHT	——	To adjust the brightness on the LCD screen with the SEL/PUSH EXEC dial.  	PLAYER CAMERA
LCD B. L.	● BRT NORMAL	To set the brightness on the LCD screen normal	PLAYER CAMERA
	BRIGHT	To brighten the LCD screen	
LCD COLOUR	———	To adjust the colour on the LCD screen To reduce intensity To increase intensity	PLAYER CAMERA

Notes on the SteadyShot function (CCD-TRV78E/TRV98E only)

- The SteadyShot function will not correct excessive camera-shake.
- Attachment of a conversion lens (optional) may influence the SteadyShot function.
- SteadyShot does not operate in the 16:9FULL mode. If you set STEADYSHOT to ON in the menu settings, the 🖐 indicator flashes.

If you cancel the SteadyShot function (CCD-TRV78E/TRV98E only)

The SteadyShot off indicator 🖐 appears. Your camcorder prevents excessive compensation for camera-shake.

Note on the playback of the NTSC tapes

You can play back tapes recorded in the NTSC video system.

When you play back a tape on a Multi System TV, select the best mode while viewing the picture on the TV.

In more than 5 minutes after removing the power source

The "EDIT" and "COMMANDER" (CCD-TRV49E/TRV59E/TRV78E/TRV98E only) items are returned to their default settings.

The other menu items are held in memory even when the battery is removed.

Note on LCD B.L.

When you use power sources other than the battery pack, "BRIGHT" is automatically selected.

Icon/item	Mode	Meaning	POWER switch
REC MODE	● SP	To record in SP (Standard Play) mode	CAMERA
	LP	To increase the recording time to twice the SP mode	
ORC TO SET	———	To automatically adjust the recording condition to get the best possible recording. Press START/STOP to start adjustment. Your camcorder takes about 10 seconds to check the tape condition and then returns to the standby mode.	CAMERA

ORC stands for "Optimizing the Recording Condition".

Icon/item	Mode	Meaning	POWER switch
REMAIN	● AUTO	To display the remaining tape bar: • for about 8 seconds after your camcorder is turned on and calculates the remaining amount of tape • for about 8 seconds after a cassette is inserted and your camcorder calculates the remaining amount of tape • for about 8 seconds after ► is pressed in PLAYER mode • for about 8 seconds after DISPLAY is pressed to display the screen indicators • for the period of tape rewinding, forwarding or picture search in the PLAYER mode	PLAYER CAMERA
	ON	To always display the remaining tape bar	

Notes on the LP mode

- When you record a tape in the LP mode on your camcorder, we recommend playing back the tape on your camcorder. When you play back the tape on other camcorders or VCRs, noise may occur in pictures or sound.
- Noise may occur also when you play on your camcorder tapes recorded in the LP mode on other camcorders or VCRs.

Notes on ORC setting

- Each time you eject the cassette, the ORC setting will be canceled. If necessary, reset the setting.
- You cannot use this setting on a tape with the red mark on the cassette exposed. (i. e. the tape is write protected)
- When you set ORC TO SET, a non-recorded section of about 0.1 seconds appears on the tape. However, note that this non-recorded section disappears from the tape when you continue recording from this section.
- To check if you have already set the ORC setting, select ORC TO SET in the menu settings. "ORC ON" is displayed if ORC TO SET is already set.

Icon/item	Mode	Meaning	POWER switch
CLOCK SET		To set the date or time (p. 22)	CAMERA
AUTO DATE	● ON	To record the date for 10 seconds after recording has started	CAMERA
	OFF	To cancel the auto date function	
LTR SIZE	● NORMAL	To display selected menu items in normal size	PLAYER CAMERA
	2×	To display selected menu items at twice the normal size	
DEMO MODE	● ON	To make the demonstration appear	CAMERA
	OFF	To cancel the demonstration mode	

Notes on DEMO MODE

- You cannot select DEMO MODE when a cassette is inserted in your camcorder.
- DEMO MODE is set to STBY (Standby) at the factory and the demonstration starts about 10 minutes after you have set the POWER switch to CAMERA without a cassette inserted.
  To cancel the demonstration, insert a cassette, set the POWER switch to other than CAMERA, or set DEMO MODE to OFF.
- When NIGHTSHOT is set to ON, the "NIGHTSHOT" indicator appears on the screen and you cannot select DEMO MODE in the menu settings.

Changing the menu settings

Icon/item	Mode	Meaning	POWER switch
ETC **WORLD TIME**	———	To set the clock to the local time. Turn the SEL/PUSH EXEC dial to set a time difference. The clock changes by the time difference you set here. If you set the time difference to 0, the clock returns to the originally set time.	CAMERA
BEEP	● MELODY	To output the melody when you start/stop recording or when an unusual condition occurs on your camcorder	PLAYER CAMERA
	NORMAL	To output the beep sound instead of the melody	
	OFF	To cancel the melody and beep sound	
COMMANDER*	● ON	To activate the Remote Commander supplied with your camcorder	PLAYER CAMERA
	OFF	To deactivate the Remote Commander to avoid remote control misoperation caused by other VCR's remote control	
DISPLAY	● LCD	To show the display on the LCD screen and viewfinder	PLAYER CAMERA
	V-OUT/LCD	To show the display on the TV screen, LCD screen and viewfinder	
REC LAMP	● ON	To light up the camera recording lamp at the front of your camcorder	CAMERA
	OFF	To turn the camera recording lamp off so that the subject is not aware of the recording	

* CCD-TRV49E/TRV59E/TRV78E/TRV98E only

English

Types of trouble and their solutions

If you run into any problem using your camcorder, use the following table to troubleshoot the problem. If the problem persists, disconnect the power source and contact your Sony dealer or local authorized Sony service facility. If "C:□□:□□" appears on the screen, the self-diagnosis display function has worked. See page 83.

In the recording mode

Symptom	Cause and/or Corrective Actions
START/STOP does not operate.	• The POWER switch is set to OFF (CHARGE) or PLAYER. → Set it to CAMERA. (p. 26) • The tape has run out. → Rewind the tape or insert a new one. (p. 24, 38) • The write-protect tab is set to expose the red mark. → Use a new tape or slide the tab. (p. 24) • The tape is stuck to the drum (moisture condensation). → Remove the cassette and leave your camcorder for at least 1 hour to acclimatize. (p. 98)
The power goes off.	• While being operated in CAMERA mode, your camcorder has been in the standby mode for more than 5 minutes. → Set the POWER switch to OFF (CHARGE) and then to CAMERA again. (p. 26) • The battery pack is dead or nearly dead. → Install a fully charged battery pack. (p. 14, 15)
The image on the viewfinder screen is not clear.	• The viewfinder lens is not adjusted. → Adjust the viewfinder lens. (p. 31)
The SteadyShot function does not work. (CCD-TRV78E/TRV98E only)	• STEADYSHOT is set to OFF in the menu settings. → Set it to ON. (p. 69) • The SteadyShot function does not work when the wide mode is set to 16:9FULL.
The autofocusing function does not work.	• FOCUS is set to MANUAL. → Set it to AUTO. (p. 55) • Shooting conditions are not suitable for autofocus. → Set FOCUS to MANUAL to focus manually. (p. 55)
The ⊗ indicator flashes in the viewfinder.	• The video heads may be dirty. → Clean the heads using the Sony V8-25CLD cleaning cassette (optional). (p. 99)
The picture does not appear in the viewfinder.	• The LCD panel is open. → Close the LCD panel. (p. 28)
A vertical band appears when you shoot a subject such as lights or a candle flame against a dark background.	• The contrast between the subject and background is too high. This is not a malfunction.
A vertical band appears when you shoot a very bright subject.	• This is not a malfunction.

(Continued on the following page)

Symptom	Cause and/or Corrective Actions
An unknown picture is displayed on the screen.	• If 10 minutes elapse after you set the POWER switch to CAMERA or DEMO MODE is set to ON in the menu settings without a cassette inserted, your camcorder automatically starts the demonstration. → Insert a cassette and the demonstration stops. You can also cancel DEMO MODE. (p. 72)
The picture is recorded in incorrect or unnatural colours.	• NIGHTSHOT is set to ON. → Set it to OFF. (p. 34)
The picture appears too bright, and the subject does not appear on the screen.	• NIGHTSHOT is set to ON in a bright place. → Set it to OFF, or use the NightShot function in a dark place. (p. 34) • The backlight function is working. → Cancel it. (p. 33)

In the playback mode

Symptom	Cause and/or Corrective Actions
The tape does not move when a video control button is pressed.	• The POWER switch is set to CAMERA or OFF (CHARGE). → Set it to PLAYER. (p. 38) • The tape has run out. → Rewind the tape. (p. 38)
The playback picture is not clear or does not appear.	• The television's video channel is not adjusted correctly. → Adjust it. (p. 42) • EDIT is set to ON in the menu settings. → Set it to OFF. (p. 70) • The video head may be dirty. → Clean the heads using the Sony V8-25CLD cleaning cassette (optional). (p. 99)
No sound or only a low sound is heard when playing back a tape.	• The volume is turned to minimum. → Turn up the volume. (p. 38)

In the recording and playback modes

Symptom	Cause and/or Corrective Actions
The power does not turn on.	• The battery pack is not installed, or is dead or nearly dead. → Install a charged battery pack. (p. 14, 15) • The AC power adaptor is not connected to the mains. → Connect the AC power adaptor to the mains. (p. 20)
The end search function does not work.	• The tape was ejected after recording. • You have not recorded on the new cassette yet.
The battery pack is quickly discharged.	• The operating temperature is too low. • The battery pack is not fully charged. → Charge the battery pack fully again. (p. 15) • The battery pack is completely dead, and cannot be recharged. → Replace with a new battery pack. (p. 14)
The remaining battery time indicator does not indicate the correct time.	• You have used the battery pack in an extremely hot or cold environment for a long time. • The battery pack is completely dead, and cannot be recharged. → Replace with a new battery pack. (p. 14) • The battery is not fully charged. → Charge the battery pack fully again. (p. 15) • A deviation has occured in the remaining battery time. → Charge the battery pack fully again. (p. 15)
The power goes off although the remaining battery indicator indicates that the battery pack has enough power to operate.	• A deviation has occured in the remaining battery time. → Charge the battery pack fully again. (p. 15)
The cassette cannot be removed from the holder.	• The power source is disconnected. → Connect it firmly. (p. 14, 20) • The battery is dead. → Use a charged battery pack. (p. 14, 15)
The ▣ and ⏏ indicators flash and no functions except for cassette ejection work.	• Moisture condensation has occurred. → Remove the cassette and leave your camcorder for at least 1 hour to acclimatize. (p. 98)

(Continued on the following page)

Types of trouble and their solutions

Others

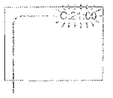
Symptom	Cause and/or Corrective Actions
The Remote Commander supplied with your camcorder does not work. (CCD-TRV49E/TRV59E/TRV78E/TRV98E only)	• COMMANDER is set to OFF in the menu settings. → Set it to ON. (p. 73) • Something is blocking the infrared rays. → Remove the obstacle. • The batteries inserted in the battery holder with the + – polarities incorrectly matching the + – marks. → Insert the batteries with the correct polarity. (p. 116) • The batteries are dead. → Insert new ones. (p. 116)
The date or time indicator does not appear, and the bars "--:--:--" appear.	• Reset the date and time. (p. 22)
The melody or beep sounds for 5 seconds.	• Moisture condensation has occurred. → Remove the cassette and leave your camcorder for at least 1 hour to acclimatize. (p. 98) • Some troubles have occurred in your camcorder. → Remove the cassette and insert it again, then operate your camcorder.
No funciton works though the power is on.	• Disconnect the connecting plate of the AC adaptor or remove the battery, then reconnect it in about 1 minute. Turn the power on (p. 14, 20). If the functions still do not work, press the RESET button using a sharp-pointed object. (If you press the RESET button, all the settings including the date and time return to the default.) (p. 112)
While charging the battery pack, the CHG lamp does not light up.	• The AC power adaptor is disconnected. → Connect it firmly. (p. 15) • Something is wrong with the battery pack. → Contact your Sony dealer or local authorized Sony service facility.
You cannot charge the battery pack installed to your camcorder.	• The POWER switch is not set to OFF (CHARGE). → Set it to OFF (CHARGE)

English

Self-diagnosis display

Your camcorder has a self-diagnosis display function.
This function displays the current condition of your camcorder as a 5-digit code (a combination of a letter and figures) on the LCD screen, in the viewfinder or in the display window. If a 5-digit code is displayed, check the following code chart. The last two digits (indicated by □□) will differ depending on the state of your camcorder.

Viewfinder or LCD screen



Self-diagnosis display

- C:□□:□□
  You can service your camcorder yourself.
- E:□□:□□
  Contact your Sony dealer or local authorized Sony service facility

Five-digit display	Cause and/or Corrective Actions
C:04:□□	• You are using a battery pack that is not an "InfoLITHIUM" battery pack. → Use an "InfoLITHIUM" battery pack. (p. 95)
C:21:□□	• Moisture condensation has occurred. → Remove the cassette and leave your camcorder for at least 1 hour to acclimatize. (p. 98)
C:22:□□	• The video heads are dirty. → Clean the heads using the Sony V8-25CLD cleaning cassette (optional). (p. 99)
C:31:□□ C:32:□□	• A malfunction other than the above that you can service has occurred. → Remove the cassette and insert it again, then operate your camcorder. → Disconnect the mains lead of the AC power adaptor or remove the battery pack. After reconnecting the power source, operate your camcorder.
E:61:□□ E:62:□□	• A malfunction that you cannot service has occurred. → Contact your Sony dealer or local authorized Sony service facility and inform them of the 5-digit code. (example: E:61:10)

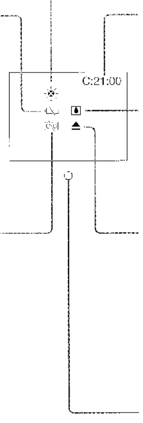
If you are unable to rectify the problem even if you try corrective actions a few times, contact your Sony dealer or local authorized Sony service facility.

English

Warning indicators and messages

If indicators and messages appear on the screen, check the following:
See the page in parentheses "( )" for more information.

Warning indicators



The video heads are dirty
Slow flashing:
- You need to clean the heads using the Sony V8-25CLD cleaning cassette (optional) (p. 99).

The battery is dead or nearly dead
Slow flashing:
- The battery is nearly dead.

Depending on conditions, the environment or the battery pack, the warning indicator may flash, even if there are 5 to 10 minutes battery remaining.

Fast flashing:
- The battery is dead (p. 15).
- The battery is completely dead, and cannot be recharged.

Warning indicator as to tape
Slow flashing:
- The tape is near the end.
- No tape is inserted.*
- The write-protect tab on the cassette is out (red) (p. 25).*

Fast flashing:
- The tape has run out.*

Self-diagnosis display (p. 83)

Moisture condensation has occurred*
Fast flashing:
- Eject the cassette, turn off your camcorder, and leave it for about 1 hour with the cassette compartment open (p. 98).

You need to eject the cassette
Slow flashing:
- The write-protect tab on the cassette is out (red) (p. 25).*

Fast flashing:
- Moisture condensation has occurred (p. 98).
- The tape has run out.*
- The self diagnosis display function is activated (p. 83).*

Warning indicator as to tape or battery
Slow flashing:
- The battery is nearly dead.
- The tape is near the end.

Fast flashing:
- The battery is dead.
- The tape has run out.*

---

* You hear the melody or beep sound.

Warning indicators and messages

Warning messages

• CLOCK SET	Set the date and time (p. 22).
• For "InfoLITHIUM" BATTERY ONLY	Use an "InfoLITHIUM" battery pack (p. 95).
• CLEANING CASSETTE	The video heads are dirty (p. 99).
• START/STOP KEY	Press the START/STOP button to activate the ORC setting. This message is displayed in white. (p. 71).
• ORC	The ORC setting is working. This message is displayed in white (p. 71).
• NO TAPE	Insert a cassette tape*.
• TAPE END	The tape has reached the end of the tape*.

---

* You hear the melody or beep sound.

Предупреждающие индикаторы и сообщения

Предупреждающие сообщения

• CLOCK SET	Переустановите дату и время (стр. 22).
• For "InfoLITHIUM" BATTERY ONLY	Используйте батарейный блок "InfoLITHIUM" (стр. 95).
• CLEANING CASSETTE	Загрязнились видеоголовки (стр. 99).
• START/STOP KEY	Нажмите кнопку START/STOP для включения установки ORC Это сообщение высветится белым цветом (стр. 76).
• ORC	Выполняется установка ORC. Это сообщение высвечивается белым цветом (стр. 76).
• NO TAPE	Установите кассету с лентой*.
• TAPE END	Достигнут конец ленты*.

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* Вы услышите мелодию или зуммерный сигнал.

— Additional Information —

Usable cassettes and playback modes

Selecting the cassette type

You can use both Hi8 and standard 8 mm video cassettes on your camcorder. When you use a Hi8 video cassette, recording and playback are carried out in the Hi8 system. When you use a standard 8 mm video cassette, recording and playback are carried out in the standard 8 mm system.
If you play back a tape recorded on a different video recorder on your camcorder, the playback mode is automatically selected according to the format in which the tape has been recorded.

This Hi8 system is an extension of the standard 8 mm system, and was developed to produce higher quality pictures.
You cannot playback a tape recorded in the Hi8 system correctly on video recorders/players other than a Hi8 video recorder/player.

When you play back

The playback mode (SP/LP) and system, Hi8 or standard 8 mm are automatically selected according to the format in which the tape has been recorded. The quality of the recorded picture in the LP mode, however, will not be as good as the SP mode.

Foreign 8 mm video

Because TV colour systems differ from country to country, you may not be able to play back foreign pre-recorded tapes. Refer to "Using your camcorder abroad" to check the TV colour systems used in foreign countries.

— Дополнительная информация —

Используемые кассеты и режимы воспроизведения

Выбор типа кассеты

Вы можете использовать на Вашей видеокамере либо видеокассеты Hi8, либо стандартные 8-мм видеокассеты. Если Вы используете видеокассету Hi8, запись и воспроизведение будут выполняться в системе Hi8. Если Вы используете стандартную 8-мм видеокассету, запись и воспроизведение будут выполняться в стандартной 8-мм системе.
Если Вы будете воспроизводить на Вашей видеокамере ленту, записанную на разных видеомагнитофонах, то режим воспроизведения будет выбираться автоматически в соответствии с форматом, в котором была записана лента.

Система Hi8 является модификацией стандартной 8-мм системы и была разработана для получения высококачественных изображений.
Вы не сможете воспроизвести надлежащим образом ленту, записанную в системе Hi8, на видеомагнитофоне/плейере, который не относится к видеомагнитофону/плейеру Hi8.

При выполнении воспроизведения

Режим воспроизведения (SP/LP) и система, Hi8/стандартная 8-мм система выбираются автоматически в соответствии с форматом, в котором была выполнена запись на ленте. Однако, качество записанного изображения в режиме LP не будет таким хорошим, как в режиме SP.

Иностранные 8-мм видеоленты

Поскольку системы цветного телевидения отличаются от страны к стране, возможно Вы не сможете воспроизводить иностранные предварительно записанные ленты. См. раздел "Использование Вашей видеокамеры за границей" для проверки систем цветного телевидения, используемых в других странах.

Usable cassettes and playback modes

Playing back an NTSC-recorded tape

You can play back tapes recorded in the NTSC video system using the SP mode.
However, note that the following will occur during playback of an NTSC-recorded tape.

- When playing back a tape on a TV screen, you may not get the original colour depending on the TV. When you play back on a Multi System TV, set NTSC PB to the desired mode in the menu settings.
- During playback, a black band appears on the lower part of the viewfinder.
- You cannot play back a tape recorded in the NTSC video system with the LP mode neither on the LCD nor on a TV screen.
- If a tape has portions recorded in PAL and NTSC video systems, the tape counter reading is not correct. This discrepancy is due to the difference between the counting cycle of the two video systems.
- You cannot edit the NTSC-recorded tape onto another VCR.

Используемые кассеты и режимы воспроизведения

Воспроизведение лент, записанных в системе NTSC

Вы можете воспроизводить ленты, записанные в системе NTSC, используя режим SP.
Однако, имейте в виду, что во время воспроизведения лент, записанных в системе NTSC, будет иметь место следующее.

- При воспроизведении ленты на экране телевизора Вы можете не получить первоначальные цвета в зависимости от типа телевизора. При воспроизведении на мультисистемном телевизоре установите переключатель NTSC PB на нужный режим в установках меню.
- Во время воспроизведения в нижней части видоискателя будет появляться черная полоса.
- Вы не можете воспроизводить ленту, записанную в видеосистеме NTSC в режиме LP, ни на экране ЖКД, ни на экране телевизора.
- Если на ленте имеются участки, записанные в видеосистемах PAL и NTSC, то функционирование счетчика ленты будет неправильным. Это расхождение объясняется разницей между счетными циклами двух видеосистем.
- Вы не можете выполнять монтаж ленты, записанной в системе NTSC, на другой КВМ.

About "InfoLITHIUM" battery

What is the "InfoLITHIUM" battery?

The "InfoLITHIUM" battery is a lithium-ion battery that has functions for communicating information related to operating conditions between your camcorder and an AC power adaptor.
The "InfoLITHIUM" battery calculates the power consumption according to the operating conditions of your camcorder, and displays the remaining battery time in minutes.

Charging the battery

- Be sure to charge the battery before you start using your camcorder.
- We recommend charging the battery in an ambient temperature of between 10 to 30°C until the CHG lamp goes out, indicating that the battery is fully charged. If you charge the battery outside of this temperature range, you may not be able to effectively charge the battery.
- After charging is completed, either disconnect the cable from the DC IN jack on your camcorder or remove the battery.

Effective use of the battery

- Battery performance drops in low-temperature surroundings. So, the time that the battery can be used is shorter in cold places. We recommend the following to ensure care-free, longer use:
  - –Put the battery in a pocket close to your body to warm it up, and insert it in your camcorder immediately before you start taking shots.
  - –Use the high-power battery (NP-F730/F750/F930/F950/F960, optional).
- Frequently using the LCD screen or frequently operating playback, fast forward or rewind wears out the battery faster. We recommend using the high-power battery (NP-F730/F750/F930/F950/F960, optional).
- Be certain to turn the POWER switch to OFF (CHARGE) while taking shots or playing back on your camcorder. The battery also wears out when your camcorder is in the standby mode or playback is paused.
- Have spare batteries handy for two or three times the expected shooting time, and take test shots before taking the actual shots.

О батарейном блоке "InfoLITHIUM"

Что такое батарейный блок "InfoLITHIUM"?

Батарейный блок "InfoLITHIUM" является литиево-ионным батарейным блоком, который имеет функции для информации связи, относящейся к условиям взаимодействия между Вашей видеокамерой и сетевым адаптером переменного тока.
Батарейный блок "InfoLITHIUM" подсчитывает потребляемую мощность в соответствии с условиями эксплуатации Вашей видеокамеры и отображает время оставшегося заряда батарейного блока в минутах.

Зарядка батарейного блока

- Не забудьте зарядить батарейный блок перед началом эксплуатации видеокамеры.
- Мы рекомендуем заряжать батарейный блок при окружающей температуре в пределах между 10 и 30°C до тех пор, пока не погаснет лампочка CHG, означающая, что батарейный блок полностью заряжен. Если Вы будете заряжать батарейный блок вне рекомендуемого температурного диапазона, возможно Вы не сможете эффективно зарядить батарейный блок.
- После завершения зарядки, либо отсоедините кабель от гнезда DC IN на Вашей видеокамере, либо снимите батарейный блок.

Эффективное использование батарейного блока

- Характеристика батарейного блока упадет при низкой окружающей температуре. Поэтому время использования батарейного блока в холодных местах будет короче. Для обеспечения долговечной эксплуатации без проблем рекомендуется следующее:
  - – Положите батарейный блок в свой карман поближе к своему телу для того, чтобы прогреть его, и вставьте его в свою видеокамеру непосредственно перед выполнением съемок.
  - – Используйте высокоемкостный батарейный блок (NP-F730/F750/F930/F950/F960, приобретается отдельно).
- Частое использование экрана ЖКД или частое использование функций воспроизведения, ускоренной перемотки вперед или назад приводит к более быстрой разрядке батарейного блока. Рекомендуется использовать высокоемкостный батарейный блок (NP-F730/F750/F930/F950/F960, приобретается отдельно).
- Не забудьте повернуть переключатель POWER в положение OFF (CHARGE) при выполнении съемок или воспроизведения на Вашей видеокамере. Батарейный блок всегда разряжается, если Ваша видеокамера находится в режиме ожидания или паузы воспроизведения.
- Удобно иметь батарейных блоков для времени съемок в два или три раза больше ожидаемого, рекомендуется также выполнять пробные съемки перед выполнением реальных съемок.

About "InfoLITHIUM" battery

Remaining battery time indicator

- If the POWER switch turns to OFF (CHARGE) immediately even though the remaining battery indicator indicates sufficient battery power, fully charge the battery again. The correct remaining battery time will be indicated. Note, however, that the correct battery indication sometimes will not be restored if it is used in high temperatures for a long time or left in a fully charged state, or the battery is frequently used. Regard the remaining battery time indication as the approximate shooting time.
- The ▭ mark indicating there is little remaining battery time sometimes blinks depending on the operating conditions or ambient temperature and environment even if the remaining battery time is 5 to 10 minutes.

How to store the battery

- Even if the battery is not used for a long time, store it in a low humidity, cool place after fully charging it once per year and then using the battery up on your camcorder. This is to maintain the battery's functions.
- To use the battery up on your camcorder, leave your camcorder in the shooting mode until there is no more battery power left without a cassette inserted.

Battery life

- The battery life is limited. Battery capacity drops little by little as you use it more and more, and as time passes. When the available battery time is shortened considerably, a probable cause is that the battery has reached the end of its life. Buy a new battery.
- The battery life varies according to how it is stored and operating conditions and environment for each battery pack.

О батарейном блоке "InfoLITHIUM"

Индикатор времени оставшегося заряда батарейного блока

- Если переключатель POWER будет сразу повернут в положение OFF (CHARGE), даже если индикатор времени оставшегося заряда батарейного блока будет указывать достаточный заряд батарейного блока, то следует снова полностью зарядить батарейный блок. После этого время оставшегося заряда батарейного блока будет отображаться правильно. Однако имейте в виду, что правильная индикация времени оставшегося заряда батарейного блока иногда не будет восстановлена, если он использовался при высоких температурах длительный период времени или был оставлен в полностью заряженном состоянии, либо же батарейный блок часто использовался. Считайте, что индикация времени оставшегося заряда батарейного блока означает прилизительное время съемки.
- Знак ▭, означающий, что осталось немного времени заряда батарейного блока, иногда мигает в зависимости от условий эксплуатации или окружающей температуры, даже если время оставшегося заряда батарейного блока составляет 5-10 минут.

Как хранить батарейный блок

- Даже если батарейный блок не используется в течение длительного периода времени, храните его при низкой влажности, в прохладном месте после его полной зарядки один раз в год и полного использования заряда на Вашей видеокамере. Это необходимо для поддержания функций батарейного блока.
- Для полного использования заряда на вашей видеокамере, оставьте вашу видеокамеру в режиме съемки до тех пор, пока заряд батарейного блока полностью израсходуется без вставленной кассеты.

Срок службы батарейного блока

- Срок службы батарейного блока ограничен. Емкость батарейного блока будет постепенно уменьшаться по мере продолжительности его использования. Если время использования батарейного блока существенно уменьшится, вероятной причиной может быть то, что срок службы батарейного блока подошел к концу. Купите новый батарейный блок.
- Срок службы батарейного блока зависит от условий хранения и эксплуатации каждого батарейного блока.

Using your camcorder abroad

Using your camcorder abroad

You can use your camcorder in any country or area with the AC power adaptor supplied with your camcorder within 100 V to 240 V AC, 50/60 Hz.

Your camcorder is a PAL system based camcorder. If you want to view the playback picture on a TV, it must be a PAL system based TV with VIDEO/AUDIO input jack.
The following shows TV colour systems used overseas.

PAL system
Australia, Austria, Belgium, China, Czech Republic, Denmark, Finland, Germany, Great Britain, Holland, Hong Kong, Italy, Kuwait, Malaysia, New Zealand, Norway, Portugal, Singapore, Slovak Republic, Spain, Sweden, Switzerland, Thailand, etc.

PAL-M system
Brazil

PAL-N system
Argentina, Paraguay, Uruguay

NTSC system
Bahama Islands, Bolivia, Canada, Central America, Chile, Colombia, Ecuador, Jamaica, Japan, Korea, Mexico, Peru, Surinam, Taiwan, the Philippines, the U.S.A., Venezuela, etc.

SECAM system
Bulgaria, France, Guyana, Hungary, Iran, Iraq, Monaco, Poland, Russia, Ukraine, etc.

Simple setting of clock by time difference

You can easily set the clock to the local time by setting a time difference. Select WORLD TIME in the menu settings. See page 73 for more information.

Использование Вашей видеокамеры за границей

Использование Вашей видеокамеры за границей

Вы можете использовать Вашу видеокамеру в любой стране или области с помощью сетевого адаптера переменного тока, прилагаемого к Вашей видеокамере, который можно использовать в пределах от 100 В до 240 В переменного тока с частотой 50/60 Гц.

Ваша видеокамера основана на системе PAL. Если Вы хотите просмотреть воспроизводимое изображение на телевизоре, то это должен быть телевизор, основанный на системе PAL, с входными гнездами VIDEO/AUDIO.
Ниже приведены системы цветного телевидения, используемые за рубежом.

Система PAL
Австралия, Австрия, Бельгия, Великобритания, Германия, Голландия, Гонконг, Дания, Испания, Италия, Китай, Кувейт, Малайзия, Новая Зеландия, Норвегия, Португалия, Сингапур, Словацкая Республика, Таиланд, Финляндия, Чешская Республика, Швейцария, Швеция и т.д.

Система PAL-M
Бразилия

Система PAL-N
Аргентина, Парагвай, Уругвай

Система NTSC
Багамские острова, Боливия, Венесуэла, Канада, Колумбия, Корея, Мексика, Перу, Суринам, США, Тайвань, Филиппины, Центральная Америка, Чили, Эквадор, Ямайка, Япония и т.д.

Система SECAM
Болгария, Венгрия, Гвиана, Ирак, Иран, Монако, Польша, Россия, Украина, Франция и т.д.

Простая установка разницы во времени на часах

Вы можете легко установить часы на местное время путем установки разницы во времени. Выберите команду WORLD TIME в установках меню. Подробные сведения приведены на стр. 78.

Maintenance information and precautions

Moisture condensation

If your camcorder is brought directly from a cold place to a warm place, moisture may condense inside your camcorder, on the surface of the tape, or on the lens. In this condition, the tape may stick to the head drum and be damaged or your camcorder may not operate correctly. If there is moisture inside your camcorder, the beep sounds and the ▣ indicator flashes. When the ⏏ indicator flashes at the same time, the cassette is inserted in your camcorder. If moisture condenses on the lens, the indicator will not appear.

If moisture condensation occurs

None of the functions except cassette ejection will work. Eject the cassette, turn off your camcorder, and leave it for about 1 hour with the cassette compartment open. Your camcorder can be used again if the ▣ indicator does not appear when the power is turned on again.

Note on moisture condensation
Moisture may condense when you bring your camcorder from a cold place into a warm place (or vice versa) or when you use your camcorder in a hot place as follows:

- You bring your camcorder from a ski slope into a place warmed up by a heating device
- You bring your camcorder from an air conditioned car or room into a hot place outside
- You use your camcorder after a squall or a shower
- You use your camcorder in a high temperature and humid place

How to prevent moisture condensation
When you bring your camcorder from a cold place into a warm place, put your camcorder in a plastic bag and tightly seal it. Remove the bag when the air temperature inside the plastic bag has reached the surrounding temperature (after about 1 hour).

Информация по уходу за аппаратом и меры предосторожности

Конденсация влаги

Если видеокамера принесена прямо из холодного места в теплое, то внутри видеокамеры, на поверхности ленты или на объективе может произойти конденсация влаги. В таком состоянии лента может прилипнуть к барабану головки и будет повреждена или же видеокамера не сможет работать надлежащим образом. Если внутри видеокамеры произошла конденсация влаги, то прозвучит зуммерный сигнал и будет мигать индикатор ▣. Если в то же самое время будет мигать индикатор ⏏, это значит, что в видеокамеру вставлена кассета. Если влага сконденсировалась на объективе, индикатор появляться не будет.

Если произойдет конденсация влаги

Ни одна из функций, кроме выталкивания кассеты, не будут работать. Извлеките кассету, выключите видеокамеру и оставьте ее приблизительно на 1 час с открытым отсеком для кассеты. Если при повторном включении питания индикатор ▣ не появится на дисплее, Вы можете снова пользоваться видеокамерой.

Примечание по конденсации влаги
Влага может образоваться, если Вы принесете Вашу видеокамеру из холодного места в теплое (или наоборот) или когда Вы используете Вашу видеокамеру в жарком месте в следующих случаях:

- Вы принесли Вашу видеокамеру с лыжного склона в помещение, где функционирует обогреватель
- Вы принесли Вашу видеокамеру из автомобиля или из комнаты с воздушным кондиционированием в жаркое место на улице
- Вы используете видеокамеру после грозы или дождя
- Вы используете Вашу видеокамеру в очень жарком и влажном месте

Как предотвратить конденсацию влаги
Если видеокамера принесена из холодного места в теплое, то положите видеокамеру в полиэтиленовый пакет и плотно заклейте его. Выньте видеокамеру из полиэтиленового пакета, когда температура воздуха внутри пакета достигнет температуры окружающего воздуха (приблизительно через 1 час).

Maintenance information and precautions

Maintenance information

Cleaning the video head
To ensure normal recording and clear pictures, clean the video heads. The video head may be dirty when:

- The ⊗ indicator and "⚙ CLEANING CASSETTE" message appear one after another or the ⊗ indicator flashes on the screen.
- Playback pictures contain noise.
- Playback pictures are hardly visible.
- Playback pictures do not appear.

If this happens, clean the video heads with the Sony V8-25CLD cleaning cassette (optional).

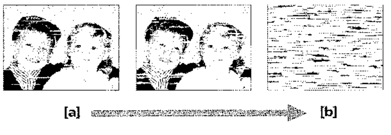
Информация по уходу за аппаратом и меры предосторожности

Информация по уходу за аппаратом

Чистка видеоголовок
Для обеспечения нормальной записи и четкого изображения следует периодически чистить видеоголовки. Видеоголовки возможно загрязнены, если:

- На экране появляются один за другим индикатор ⊗ и сообщение "⚙ CLEANING CASSETTE" или же мигат индикатор ⊗.
- Воспроизводимое изображение содержит помехи.
- Воспроизводимое изображение с трудом различимо.
- Воспроизводимое изображение не появляется на экране.

Если это произошло, почистите видеоголовки с помощью очистительной кассеты Sony V8-25CLD (приобретается отдельно).



[a] Slightly dirty
[b] Very dirty

[a] Слегка загрязнены
[b] Очень загрязнены

Note on video heads
When the playback pictures still contain noise even if you have cleaned the video heads with a cleaning cassette, the video heads may have worn down due to long use. If this is the case, they must be replaced with new heads. Contact your Sony dealer or local authorized Sony service facility.

Примечание по видеоголовкам
Если воспроизводимое изображение все еще содержит помехи даже после того, как Вы почистили видеоголовки с помощью очистительной кассеты, то, возможно, видеоголовки уже износились вследствие длительной эксплуатации видеокамеры. В этом случае, их следует заменить на новые. Обратитесь в сервисный центр Sony или в местное уполномоченное предприятие по обслуживанию изделий Sony.

Maintenance information and precautions

About care and storage of the lens

- Wipe the surface of the lens clean with a soft cloth in the following instances.
  - When there are fingerprints on the lens surface
  - In hot or humid locations
  - When the lens is used in environments susceptible to salt such as the seaside
- Store the lens in a well-ventilated location subject to little dirt or dust.

To prevent mold from occurring, periodically perform the above.
We recommend turning on and operating your camcorder about once per month to keep your camcorder in an optimum state for a long time.

Cleaning the LCD screen

If fingerprints or dust make the LCD screen dirty, we recommend using a LCD Cleaning Kit (optional) to clean the LCD screen.

Removing dust from inside the viewfinder

(1) ❶Remove the screw with a screwdriver (not supplied). ❷Then, while holding the RELEASE knob up, ❸turn the eyecup in a counterclockwise direction and pull it out.
(2) Clean the surface with a commercially available blower for a still camera.
(3) Turn the eyecup in a clockwise direction, then replace the screw.

Информация по уходу за аппаратом и меры предосторожности

Об уходе за объективом и его хранении

- В следующих случаях следует протирать поверхность объектива дочиста:
  - Если на поверхности объектива имеются отпечатки
  - В жарких и влажных местах
  - Если объектив используется в условиях, подверженных воздействию соли, например, на морском курорте.
- Храните объектив в хорошо проветриваемом место без излишней грязи и пыли.

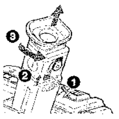
Для предотвращения образования плесени, периодически выполняйте приведенные выше процедуры.
Рекомендуется включать и использовать некоторое время Вашу видеокамеру один раз в месяц для поддержания оптимального состояния Вашей видеокамеры в течение длительного времени.

Чистка экрана ЖКД

Если на экране ЖКД появятся отпечатки или пыль, рекомендуется воспользоваться очистительным набором для ЖКД (не прилагается) для чистки ЖКД.

Удаление пыли изнутри видоискателя

(1) ❶Отвинтите винт с помощью отвертки (по заказу). ❷Затем, передвинув кнопку RELEASE, ❸поверните окуляр в направлении против часовой стрелки и потяните его.
(2) Почистите поверхность с помощью воздуходувки для фотоаппаратов, которая приобретается отдельно.
(3) Прикрепите окуляр в направлении по часовой стрелке и завинтите винт обратно на место.



Caution
Do not remove any other screws. You may remove only the screw to remove the eyecup.

Внимание
Не отвинчивайте другие винты. Вы можете отвинчивать только винт для снятия окуляра.

Maintenance information and precautions

Charging the built-in rechargeable lithium cell

Your camcorder is supplied with a built-in rechargeable lithium cell so as to retain the date and time, etc., regardless of the setting of the POWER switch. The rechargeable lithium cell is always charged as long as you are using your camcorder. The cell, however, will get discharged gradually if you do not use your camcorder. It will be completely discharged in about 4 months if you do not use your camcorder at all.
Even if the rechargeable lithium cell is not charged, it will not affect the camcorder operation. To retain the date and time, etc., charge the cell if the cell is discharged.

Charging the rechargeable lithium cell:

- Connect your camcorder to the mains using the AC power adaptor supplied with your camcorder, and leave your camcorder with the POWER switch turned off for more than 24 hours.
- Or install the fully charged battery pack in your camcorder with the POWER switch turned off for more than 24 hours.

Информация по уходу за аппаратом и меры предосторожности

Зарядка встроенного перезаряжаемого литевого элемента

Ваша видеокамера оснащена перезаряжаемой литиевой батарейкой, установленной для того, чтобы поддерживать дату, время и т.д., вне зависимости от установки переключателя POWER. Перезаряжаемая литиевая батарейка всегда заряжена, когда Вы используете Вашу видеокамеру. Однако, батарейка постепенно разрядится, если Вы не будете использовать Вашу видеокамеру. Она будет полностью разряжена примерно через 4 месяца, если Вы вообще не будете пользоваться Вашей видеокамерой. Даже если перезаряжаемая литиевая батарейка не заряжена, она не повлияет на работу видеокамеры. Чтобы поддерживать дату и время, зарядите батарейку, если она разрядилась.

Зарядка перезаряжаемого литиевого элемента:

- Подсоедините Вашу видеокамеру к электросети с помощью сетевого адаптера переменного тока, прилагаемого к Вашей видеокамере, и оставьте Вашу видеокамеру при выключенном положении переключателя POWER более чем на 24 часа.
- Или прикрепите полностью заряженный батарейный блок к Вашей видеокамере и оставьте Вашу видеокамеру с выключеным переключателем POWER более чем на 24 часа.

Maintenance information and precautions

Precautions

Camcorder operation

- Operate your camcorder on 7.2 V (battery pack) or 8.4 V (AC power adaptor).
- For DC or AC operation, use the accessories recommended in this operating instructions.
- If any solid object or liquid get inside the casing, unplug your camcorder and have it checked by a Sony dealer before operating it any further.
- Avoid rough handling or mechanical shock. Be particularly careful of the lens.
- Keep the POWER switch set to OFF (CHARGE) when you are not using your camcorder.
- Do not wrap your camcorder with a towel, for example, and operate it. Doing so might cause heat to build up inside.
- Keep your camcorder away from strong magnetic fields or mechanical vibration.
- Do not touch the LCD screen with your fingers or a sharp-pointed object.
- If your camcorder is used in a cold place, a residual image may appear on the LCD screen. This is not a malfunction.
- While using your camcorder, the back of the LCD screen may heat up. This is not a malfunction.

Информация по уходу за аппаратом и меры предосторожности

Меры предосторожности

Эксплуатация видеокамеры

- Эксплуатируйте видеокамеру от 7,2 В (батарейный блок) или 8,4 В (сетевой адаптер переменного тока)
- Что касается эксплуатации видеокамеры от постоянного и переменного тока, используйте принадлежности, рекомендуемые в данной инструкции по эксплуатации.
- Если какой-нибудь твердый предмет или жидкость попали внутрь корпуса, то выключите видеокамеру и проверьте ее у дилера Sony перед дальнейшей ее эксплуатацией.
- Избегайте грубого обращения с видеокамерой или механических ударов. Будьте особенно осторожны с объективом.
- Если видеокамера не используется, держите выключатель POWER в положении OFF (CHARGE).
- Не заворачивайте Вашу видеокамеру, например, в полотенце, и не эксплуатируйте ее в таком состоянии. В противном случае может произойти повышение температуры внутри видеокамеры.
- Держите Вашу видеокамеру подальше от сильных магнитных полей или механической вибрации.
- Не прикасайтесь к экрану ЖКД своими пальцами или острыми предметами.
- При эксплуатации Вашей видеокамеры в холодном месте, на экране ЖКД может появляться остатсчное изображение. Это не является неисправностью.
- При эксплуатации Вашей видеокамеры, задняя сторона экрана ЖКД может нагреваться. Это не является неисправностью.

Maintenance information and precautions

Built-in light

- Do not knock or jolt the built-in light while it is turned on as it may damage the bulb or shorten the life of the bulb.
- Do not leave the built-in light on while it is resting on or against something; it may cause a fire or damage the built-in light.

On handling tapes

Do not insert anything into the small holes on the rear of the cassette. These holes are used to sense the type and thickness of the tape and if the recording tab is in or out.

Camcorder care

- Remove the tape, and periodically turn on the power, operate the CAMERA and PLAYER sections and play back a tape for about 5 minutes when your camcorder is not to be used for a long time.
- Clean the lens with a soft brush to remove dust. If there are fingerprints on the lens, remove them with a soft cloth.
- Clean the camcorder body with a dry soft cloth, or a soft cloth lightly moistened with a mild detergent solution. Do not use any type of solvent which may damage the finish.
- Do not let sand get into your camcorder. When you use your camcorder on a sandy beach or in a dusty place, protect it from the sand or dust. Sand or dust may cause your camcorder to malfunction, and sometimes this malfunction cannot be repaired.

Информация по уходу за аппаратом и меры предосторожности

Встроенная подсветка

- Не стучите по устройству подсветки и не трясите его в то время, когда оно включено, поскольку это может повредить лампу накаливания или сократить ее срок службы.
- Не оставляйте встроенную подсветку включенной в то время, когда она на чем-то лежит или направлена на какой-либо предмет.

Относительно обращения с лентами

Не вставляйте ничего в маленькие отверстия на задней стороне кассеты. Эти отверстия используются для определения типа и толщины ленты, а также для определения наличия или отсутствия лепестка защиты записи на ленте.

Уход за видеокамерой

- Если Ваша видеокамера не будет использоваться в течение длительного времени, выньте кассету с лентой и периодически включайте питание, оперируйте устройствами CAMERA и PLAYER и воспроизводите ленту в течение 5-ти минут.
- Чистите объектив с помощью мягкой кисточки для удаления пыли. Если имеются отпечатки пальцев на объективе, удалите их с помощью мягкой ткани.
- Чистите корпус видеокамеры с помощью сухой мягкой ткани или мягкой ткани, слегка смоченной раствором умеренного моющего средства. Не используйте каких-либо типов растворителей, которые могут повредить отделку.
- Не допускайте попадания песка в видеокамеру. Если Вы используете видеокамеру на песчаном пляже или в каком-либо пыльном месте, предохраните аппарат от песка или пыли. Песок или пыль могут привести к неисправности аппарата, которая иногда может быть неисправимой.

Maintenance information and precautions

AC power adaptor

- Unplug the unit from the mains when you are not using the unit for a long time. To disconnect the mains lead, pull it out by the plug. Never pull the mains lead itself.
- Do not operate the unit with a damaged cord or if the unit has been dropped or damaged.
- Do not bend the mains lead forcibly, or place a heavy object on it. This will damage the cord and may cause fire or electrical shock.
- Prevent metallic objects from coming into contact with the metal parts of the connecting section. If this happens, a short may occur and the unit may be damaged.
- Always keep metal contacts clean.
- Do not disassemble the unit.
- Do not apply mechanical shock or drop the unit.
- While the unit is in use, particularly during charging, keep it away from AM receivers and video equipment. AM receivers and video equipment disturb AM reception and video operation.
- The unit becomes warm during use. This is not a malfunction.
- Do not place the unit in locations that are:
  – Extremely hot or cold
  – Dusty or dirty
  – Very humid
  – Vibrating

Информация по уходу за аппаратом и меры предосторожности

Сетевой адаптер переменного тока

- Отсоедините аппарат от электрической сети, если он не используется длительное время. Для отсоединения сетевого шнура потяните его за разъем. Никогда не тяните за сам шнур.
- Не эксплуатируйте аппарат с поврежденным шнуром или же в случае, если аппарат упал или был поврежден.
- Не сгибайте сетевой провод силой и не ставьте на него тяжелые предметы. Это повредит провод и может привести к пожару или поражению электрическим током.
- Будьте осторожны, чтобы никакие металлические предметы не соприкасались с металлическими частями соединительной секции. Если это случится, то может произойти короткое замыкание, и аппарат может быть поврежден.
- Всегда поддерживайте металлические контакты в чистоте.
- Не разбирайте аппарат.
- Не подвергайте аппарат механической вибрации и не роняйте его.
- При использовании аппарата, особенно во время зарядки, держите его подальше от приемников АМ-радиовещания и видеоаппаратуры. Приемники АМ-радиовещания и видеоаппаратура нарушают АМ-радиоприем и работу видеоаппаратуры.
- В процессе эксплуатации аппарат нагревается. Это является вполне нормальным.
- Не размещайте аппарат в местах:
  – Чрезмерно жарких или холодных
  – Пыльных или грязных
  – Очень влажных
  – Подверженных вибрации

Maintenance information and precautions

Battery pack

- Use only the specified charger or video equipment with the charging function.
- To prevent an accidental short circuit, do not allow metal objects to come into contact with the battery terminals.
- Keep the battery pack away from fire.
- Never expose the battery pack to temperatures above 60°C (140°F), such as in a car parked in the sun or under direct sunlight.
- Keep the battery pack dry.
- Do not expose the battery pack to any mechanical shock.
- Do not disassemble nor modify the battery pack.
- Attach the battery pack to the video equipment securely.
- Charging while some capacity remains does not affect the original battery capacity.

Notes on dry batteries
– CCD-TRV49E/TRV59E/TRV78E/TRV98E only

To avoid possible damage from battery leakage or corrosion, observe the following:

- Be sure to insert the batteries with the + – polarities matched to the + – marks.
- Dry batteries are not rechargeable.
- Do not use a combination of new and old batteries.
- Do not use different types of batteries.
- Current flows from batteries when you are not using them for a long time.
- Do not use leaking batteries.

If batteries are leaking

- Wipe off the liquid in the battery compartment carefully before replacing the batteries.
- If you touch the liquid, wash it off with water.
- If the liquid get into your eyes, wash your eyes with a lot of water and then consult a doctor.

If any problem occurs, unplug your camcorder and contact your nearest Sony dealer.

Информация по уходу за аппаратом и меры предосторожности

Батарейный блок

- Используйте только указанные устройство зарядки или видеоаппаратуру с функцией зарядки.
- Для предотвращения несчастного случая из-за короткого замыкания не допускайте контакта металлических предметов с контактами батарейного блока.
- Храните батарейный блок подальше от огня.
- Никогда не подвергайте батарейный блок воздействию температур выше 60°C, например, не оставляйте батарейный блок в припаркованном автомобиле под солнцем или прямым солнечным светом.
- Храните батарейный блок в сухом виде.
- Не подвергайте батарейный блок механическим ударам.
- Не разбирайте и не переделывайте батарейный блок.
- Подсоединяйте батарейный блок к видеоаппаратуре плотно.
- Зарядка при наличии оставшейся емкости не влияет на первоначальную емкость батарейного блока.

Примечание к сухим батарейкам – Только модели CCD-TRV76E/TRV78E/TRV98E

Во избежание возможного повреждения видеока-меры вследствие утечки внутреннего вещества батареек или коррозии соблюдайте следующее:

- При установке батареек соблюдайте правильную полярность + – в соответствии с метками + –.
- Сухие батарейки нельзя перезаряжать.
- Не используйте новые батарейки вместе со старыми.
- Не используйте батарейки разного типа.
- Если батарейки не используются длительное время, они постепенно разряжаются.
- Не используйте батарейки, которые потекли.

Если произошла утечка внутреннего вещества батареек

- Перед тем, как заменить батарейки, тщательно протрите остатки жидкости в отсеке для батареек.
- В случае попадания жидкости на кожу, промойте жидкость водой.
- В случае попадания жидкости в глаза, промойте свои глаза большим количеством воды, после чего обратитесь к врачу.

В случае возникновения каких-либо проблем, отключите Вашу видеокамеру от источника питания и обратитесь в ближайший сервисный центр Sony.

— Quick Reference —

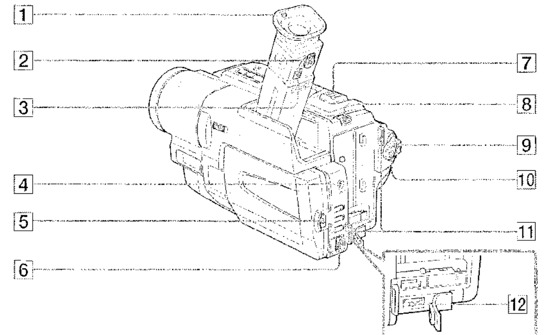
Identifying the parts and controls

Camcorder

— Оперативный справочник —

Обозначение частей и регуляторов

Видеокамера



1 **Eyecup** (p. 100)
2 **Viewfinder lens adjustment lever** (p. 31)
3 **Eyecup RELEASE knob** (p. 100)
4 🎧 **(earphone) jack**
When you use earphone, the speaker on your camcorder is silent.
5 **OPEN button** (p. 26)
6 **SEL/PUSH EXEC dial** (p. 45, 67)
7 **Power zoom lever** (p. 30)
8 **BATT RELEASE lever** (p. 14)
9 **POWER switch** (p. 26)
10 **START/STOP button** (p. 26)
11 **Hooks for shoulder strap** (p. 112)
12 **DC IN jack** (p. 15, 20)

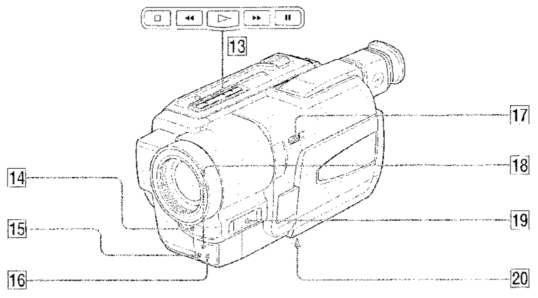
This mark indicates that this product is a genuine accessory for Sony video products. When purchasing Sony video products, Sony recommends that you purchase accessories with this "GENUINE VIDEO ACCESSORIES" mark.

1 **Окуляр** (стр. 100)
2 **Рычаг регулировки объектива видоискателя** (стр. 31)
3 **Кнопка окуляра RELEASE** (стр. 100)
4 **Гнездо** 🎧 **(наушники)**
Если Вы используете гнездо (наушники), динамик на Вашей видеокамере отключается.
5 **Кнопка OPEN** (стр. 26)
6 **Диск SEL/PUSH EXEC** (стр. 45, 67)
7 **Рычаг приводного вариообъектива** (стр. 30)
8 **Рычаг BATT RELEASE** (стр. 14)
9 **Переключатель POWER** (стр. 26)
10 **Кнопка START/STOP** (стр. 26)
11 **Крючок для плечевого ремня** (стр. 112)
12 **Гнездо DC IN** (стр. 15, 20)

Данный знак означает, что это изделие является подлинной принадлежностью для видеоаппаратуры Sony. При покупке видеоаппаратуры Sony рекомендуется приобретать для нее принадлежности Sony с таким знаком "GENUINE VIDEO ACCESSORIES".

Identifying the parts and controls

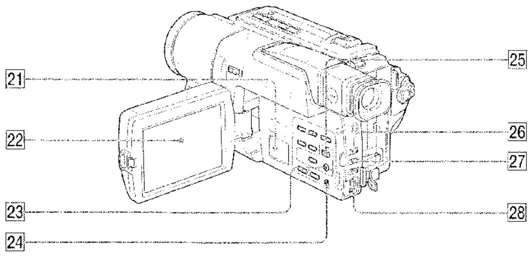
Обозначение частей и регуляторов



13 **Video control buttons** (p. 38, 40)
■ STOP (stop)
◀◀ REW (rewind)
▶ PLAY (playback)
▶▶ FF (fastforward)
❚❚ PAUSE (pause)
14 **Microphone**
15 **Remote sensor** (CCD-TRV49E/TRV59E/TRV78E/TRV98E only) (p. 116)
16 **Infrared rays emitter** (p. 34)
17 **NIGHTSHOT switch** (p. 34)
18 **Camera recording lamp** (p. 26)
19 **Display window** (p. 118)
20 **Tripod receptacle** (base)
Make sure that the length of the tripod screw is less than 6.5 mm (9/32 inch). Otherwise, you cannot attach the tripod securely and the screw may damage your camcorder.

13 **Кнопки видеоконтроля** (стр. 38, 40)
■ STOP (остановка)
◀◀ REW (ускоренная перемотка назад)
▶ PLAY (воспроизведение
▶▶ FF (ускоренная перемотка вперед)
❚❚ PAUSE (пауза)
14 **Микрофон**
15 **Датчик дистанционного управления** (Только модели CCD-TRV49E/TRV59E/TRV78E/TRV98E) (стр. 116)
16 **Излучатель инфракрасных лучей** (стр. 34)
17 **Переключатель NIGHTSHOT** (стр. 34)
18 **Лампочка записи видеокамеры** (стр. 26)
19 **Окошко дисплея** (стр. 118)
20 **Гнездо для треноги** (основание)
Убедитесь, что длина винта треноги менее 6,5 мм. В противном случае Вы не сможете надежно прикрепить треногу, а винт может повредить Вашу видеокамеру.

Identifying the parts and controls
Обозначение частей и регуляторов



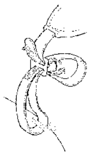
21 **Speaker**	21 **Динамик**
22 **LCD screen** (p. 28)	22 **Экран ЖКД** (стр. 28)
23 **MENU button** (p. 67)	23 **Кнопка MENU** (стр. 67)
24 **RESET button** (p.82)	24 **Кнопка RESET** (стр. 89)
25 **EXPOSURE button** (p. 54)	25 **Кнопка EXPOSURE** (стр. 54)
26 **FADER button** (p. 47)	26 **Кнопка FADER** (стр. 47)
27 **BACK LIGHT button** (p. 33)	27 **Кнопка BACK LIGHT** (стр. 33)
28 **FOCUS button** (p. 55)	28 **Переключатель FOCUS** (стр. 55)

Attaching the shoulder strap

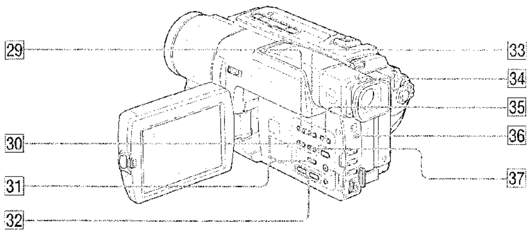
Attach the shoulder strap supplied with your camcorder to the hooks for the shoulder strap.

Прикрепление плечевого ремня

Прикрепите плечевой ремень, прилагаемый к Вашей видеокамере, к крючкам для плечевого ремня.



Identifying the parts and controls
Обозначение частей и регуляторов



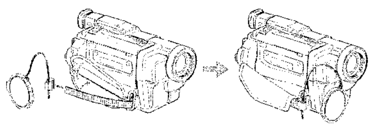
29 **DATE button** (p. 36)	29 **Кнопка DATE** (стр. 36)
30 **DISPLAY button** (p. 39)	30 **Кнопка DISPLAY** (стр. 39)
31 **TITLE button** (p. 57)	31 **Кнопка TITLE** (стр. 57)
32 **VOLUME buttons** (p. 38)	32 **Кнопка VOLUME** (стр. 38)
33 **TIME button** (p. 36)	33 **Кнопка TIME** (стр. 36)
34 **Viewfinder** (p. 31)	34 **Видоискатель** (стр. 31)
35 **COUNTER RESET button** (p. 27)	35 **Кнопка COUNTER RESET** (стр. 27)
36 **CHG lamp** (p. 15)	36 **Лампа CHG** (стр. 15)
37 **END SEARCH button** (p. 37)	37 **Кнопка END SEARCH** (стр. 57)

Attaching the lens cap

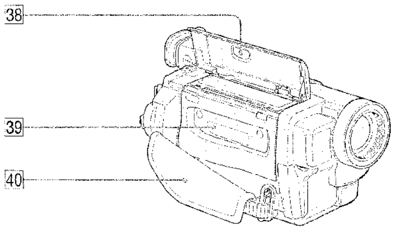
Attach the lens cap to the grip strap as illustrated.

Прикрепление крышкч объектива

Прикрепление крышкч объектива к ремнго для захвата, как показано на риеунке.



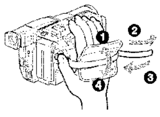
Identifying the parts and controls
Обозначение частей и регуляторов



38 **EJECT button** (p. 22)	38 **Кнопка EJECT** (стр. 22)
39 **Cassette compartment** (p. 22)	39 **Кассетный отсек** (стр. 22)
40 **Grip strap**	40 **Ремень для захвата**

Fastening the grip strap

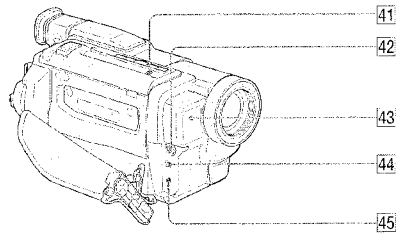
Прикрепление ремня для захвата



Fasten the grip strap firmly.

Прикрепите ремень для захвата надежно.

Identifying the parts and controls
Обозначение частей и регуляторов

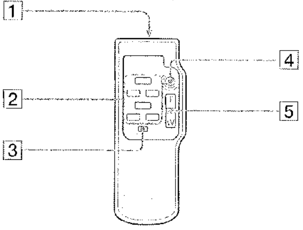


41 **LIGHT button** (p. 61)	41 **Кнопка LIGHT** (стр. 61)
42 **S VIDEO OUT jack** (p. 42)	42 **Гнездо S VIDEO OUT** (стр. 42)
43 **Built-in light** (p. 61)	43 **Встроенная подсветка** (стр. 61)
44 **A/V OUT jack** (p. 42)	44 **Гнездо A/V OUT** (стр. 42)
45 **RFU DC OUT (RFU adaptor DC output) jack** (p. 43)	45 **Гнездо RFU DC OUT (выход пост. тока ВЧ-адаптера)** (стр. 43)

Remote Commander

– CCD-TRV49E/TRV59E/TRV78E/TRV98E only

The buttons that have the same name on the Remote Commander as on your camcorder function identically to the buttons on your camcorder.



1 **Transmitter**
Point toward the remote sensor to control your camcorder after turning on your camcorder.

2 **Video control buttons** (p. 40)

3 **DISPLAY button** (p. 39)

4 **START/STOP button** (p. 26)

5 **Power zoom button** (p. 30)

To prepare the Remote Commander

Insert 2 R6 (size AA) batteries by matching the + and – polarities on the batteries to the + – marks inside the battery compartment.

Пульт дистанционного управления

– Только модели CCD-TRV49E/TRV59E/TRV78E/TRV98E

Кнопки пульта дистанционного управления, которые имеют одинаковые наименования с кнопками на видеокамере, функционируют идентично.

1 **Передатчик**
Направьте на дистанционный датчик для управления Вашей видеокамерой после ее включения.

2 **Кнопки видеоконтроля** (стр. 40)

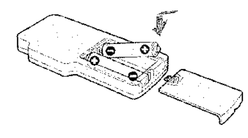
3 **Кнопка DISPLAY** (стр. 39)

4 **Кнопка START/STOP** (стр. 26)

5 **Кнопка приводного вариообъектива** (стр. 30)

Для подготовки пульта дистанционного управления

Вставьте 2 батарейки R6 (размера AA), соблюдая надлежащую полярность + и – на батарейках в соответствии со знаками + – внутри отсека для батареек.

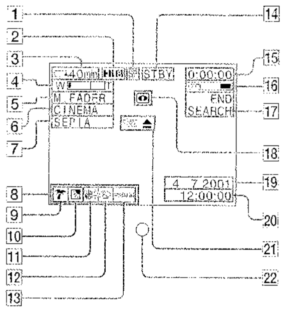


Notes on the Remote Commander
- Point the remote sensor away from strong light sources such as direct sunlight or overhead lighting. Otherwise, the Remote Commander may not function properly.
- Your camcorder works in the commander mode VTR 2. Commander modes 1, 2 and 3 are used to distinguish your camcorder from other Sony VCRs to avoid remote control misoperation. If you use another Sony VCR in the commander mode VTR 2, we recommend changing the commander mode or covering the sensor of the VCR with black paper.

Примечания к пульту дистанционного управления
- Держите дистанционный датчик подальше от сильных источников света, как например, прямые солнечные лучи или иллюминация. В противном случае дистанционное управление может не действовать.
- Данная видеокамера работает в режиме пульта дистанционного управления VTR 2. Режимы пульта дистанционного управления 1, 2 и 3 используются для отличия данной видеокамеры от других КВМ фирмы Sony во избежание неправильной работы дистанционного управления. Если Вы используете другой КВМ фиомы Sony, работающий в режиме VTR 2, мы рекомендуем Вам изменить режим пульта дистанционного управления или закрыть дистанционный датчик КВМ черной бумагой.

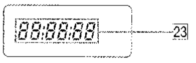
Operation indicators

LCD screen and Viewfinder/ Экран ЖКД и видоискатель



Рабочие индикаторы

Display window/Окошко дисплея



1 **Recording mode indicator** (p. 71)/**Mirror mode indicator** (p. 28)

2 **Hi8 format indicator**

3 **Remaining battery time indicator** (p. 32)

4 **Exposure indicator** (p. 54)/**Zoom indicator** (p. 30)

5 **Fader indicator** (p. 47)

6 **Wide mode indicator** (p. 44)

7 **Picture effect indicator** (p. 50)

8 **Volume indicator** (p. 38)

9 **PROGRAM AE indicator** (p. 51)

10 **Backlight indicator** (p. 33)

11 **SteadyShot off indicator (CCD-TRV78E/TRV98E only)** (p. 70)

12 **Manual focusing indicator** (p. 55)

13 **Built-in light indicator** (p. 61)

1 **Индикатор режима записи** (стр. 76)/**индикатор зеркального режима** (стр. 28)

2 **Индикатор формата Hi8**

3 **Индикатор оставшегося заряда батарейного блока** (стр. 32)

4 **Индикатор экспозиции** (стр. 54)/**индикатор вариообъектива** (стр. 30)

5 **Индикатор фейдера** (стр. 47)

6 **Индикатор широкоформатного режима** (стр. 44)

7 **Индикатор эффекта изображения** (стр. 50)

8 **индикатор громкости** (стр. 38)

9 **Индикатор PROGRAM AE** (стр. 51)

10 **Индикатор задней подсветки** (стр. 33)

11 **Индикатор выключенной устойчивой съемки (CCD-TRV78E/TRV98E)** (стр. 75)

12 **Индикатор ручной фокусировки** (стр. 55)

13 **Индикатор встроенной подсветки** (стр. 61)

14 **STBY/REC indicator** (p. 26)/**Video control mode indicator** (p. 40)

15 **Tape counter indicator** (p. 32)/**Self-diagnosis display indicator** (p. 83)

16 **Remaining tape indicator** (p. 32)

17 **END SEARCH indicator** (p. 37)

18 **NIGHTSHOT indicator** (p. 34)

19 **AUTO DATE indicator** (p. 23)/**Date indicator** (p. 23, 36)

20 **Time indicator** (p. 23, 36)

21 **Warning indicators** (p. 84)

22 **Recording lamp** (p. 26)
This indicator appears in the viewfinder only

23 **Date or time indicator** (p. 23, 36)/**Tape counter indicator** (p. 32)/**Self-diagnosis display indicator** (p. 83)

14 **Индикатор STBY/REC** (стр. 26)/**индикатор режима видеоконтроля** (стр. 40)

15 **Индикатор счетчика ленты** (стр. 32)/**индикатор функции самодиагностики** (стр. 90)

16 **Индикатор оставшейся ленты** (стр. 32)

17 **Индикатор END SEARCH** (стр. 37)

18 **Индикатор NIGHTSHOT** (стр. 34)

19 **Индикатор AUTO DATE** (стр. 23)/**индикатор даты** (стр. 23, 36)

20 **Индикатор времени** (стр. 23, 36)

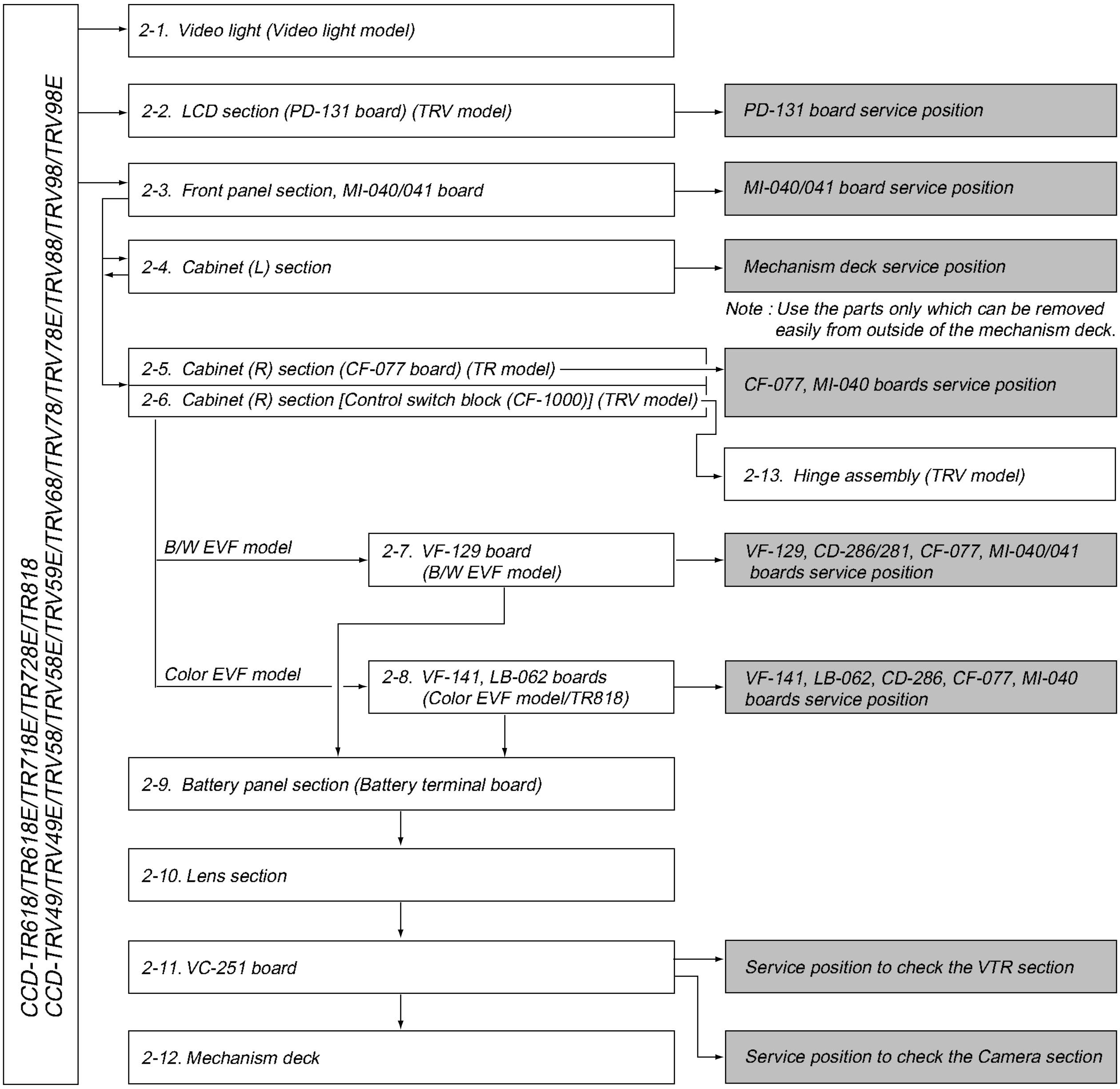
21 **Предупреждающие индикаторы** (стр. 91)

22 **Лампочка записи** (стр. 26)
Индикатор появляется только в окне видоискателя

23 **Индикатор даты или времени** (стр. 23, 36)/**индикатор счетчика ленты** (стр. 32)/**индикатор функции самодиагностики** (стр. 90)

SECTION 2
DISASSEMBLY

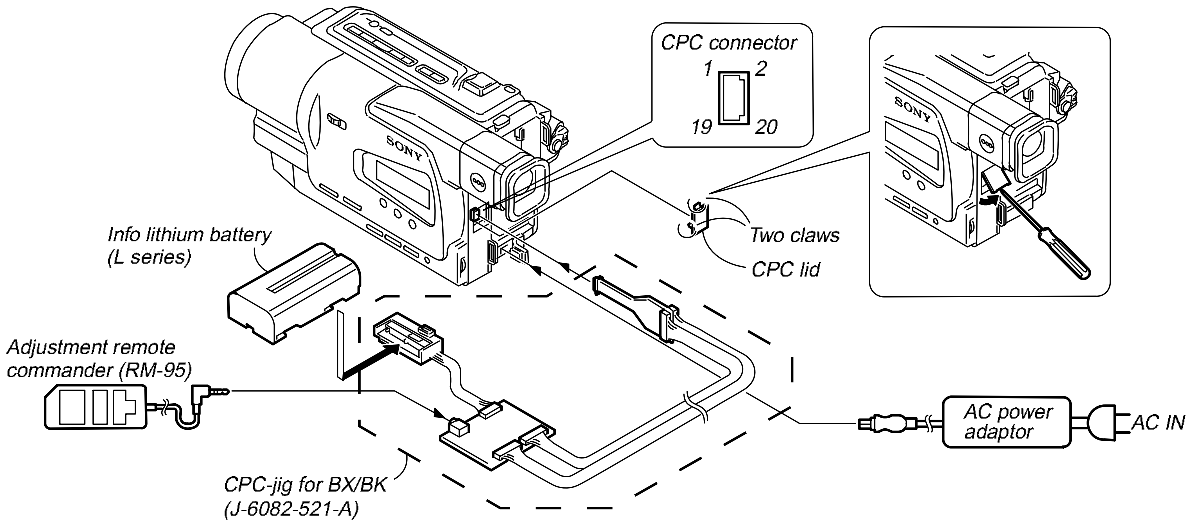
The following flow chart shows the disassembly procedure.


CCD-TR618/TR618E/TR718E/TR728E/TR818
CCD-TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E
2-1. Video light (Video light model)
2-2. LCD section (PD-131 board) (TRV model)
PD-131 board service position
2-3. Front panel section, MI-040/041 board
MI-040/041 board service position
2-4. Cabinet (L) section
Mechanism deck service position
Note : Use the parts only which can be removed easily from outside of the mechanism deck.
2-5. Cabinet (R) section (CF-077 board) (TR model)
2-6. Cabinet (R) section [Control switch block (CF-1000)] (TRV model)
CF-077, MI-040 boards service position
2-13. Hinge assembly (TRV model)
B/W EVF model
2-7. VF-129 board (B/W EVF model)
VF-129, CD-286/281, CF-077, MI-040/041 boards service position
Color EVF model
2-8. VF-141, LB-062 boards (Color EVF model/TR818)
VF-141, LB-062, CD-286, CF-077, MI-040 boards service position
2-9. Battery panel section (Battery terminal board)
2-10. Lens section
2-11. VC-251 board
Service position to check the VTR section
2-12. Mechanism deck
Service position to check the Camera section

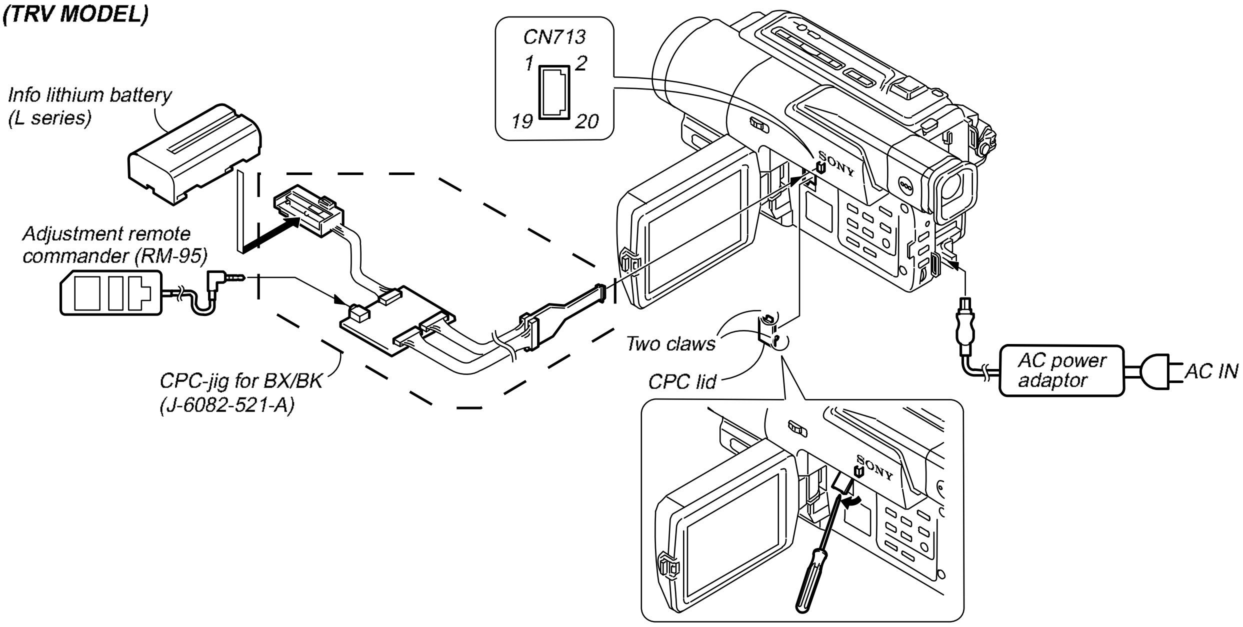
TR model :CCD-TR618/TR618E/TR718E/TR728E/TR818
TRV model :CCD-TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E
Video light model :CCD-TR618/TR618E/TR718E/TR728E/
TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E
No video light model :CCD-TR818
B/W EVF model :CCD-TR618/TR618E/TR718E/TR728E/
TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E
Color EVF model :CCD-TR818

[CONNECTION OF EQUIPMENTS]

(TR MODEL)

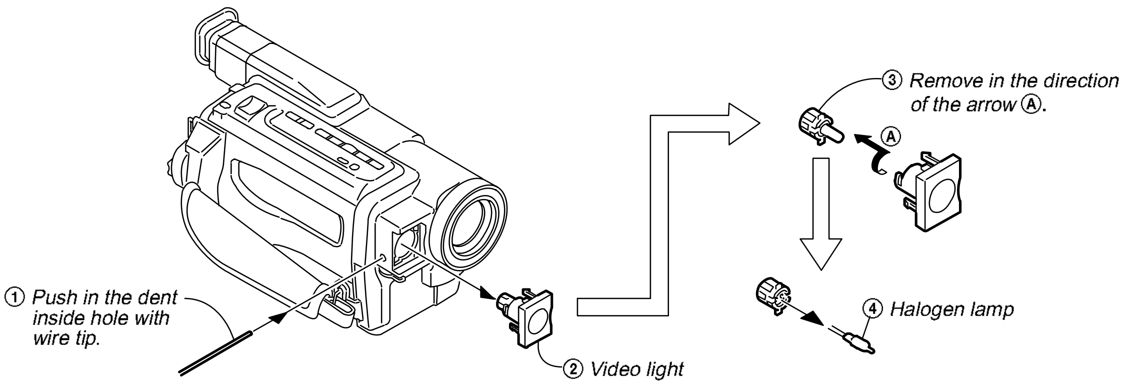

CPC connector
1
2
19
20
Two claws
CPC lid
Info lithium battery
(L series)
Adjustment remote
commander (RM-95)
AC power
adaptor
AC IN
CPC-jig for BX/BK
(J-6082-521-A)

(TRV MODEL)

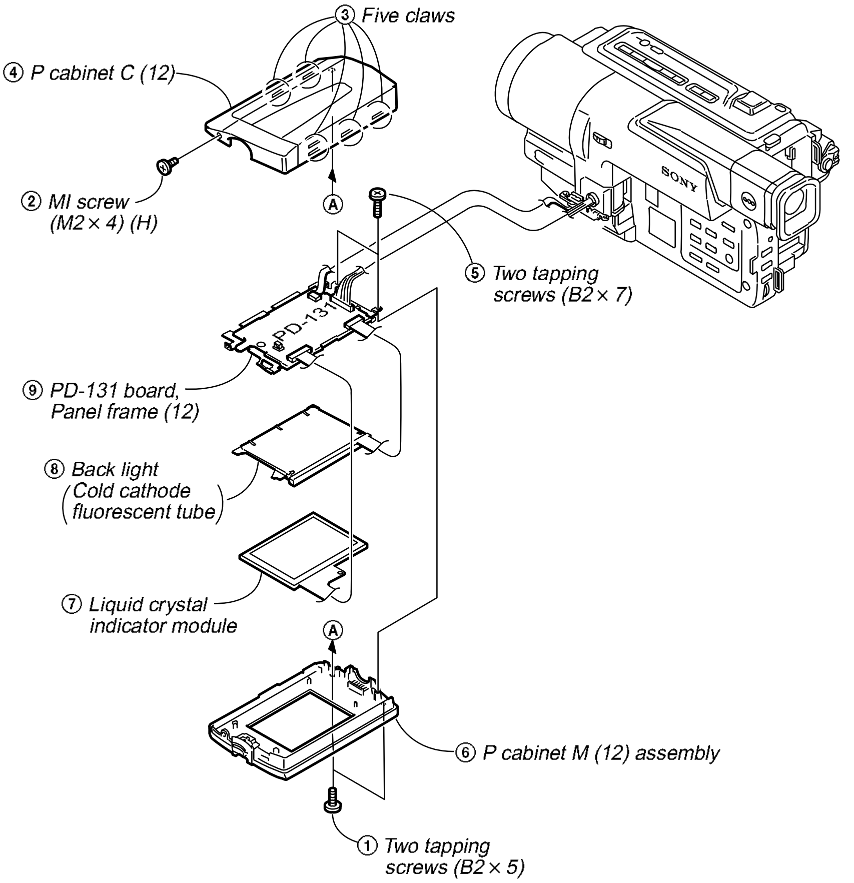

CN713
1
2
19
20
Info lithium battery
(L series)
Adjustment remote
commander (RM-95)
Two claws
CPC lid
CPC-jig for BX/BK
(J-6082-521-A)
AC power
adaptor
AC IN

NOTE: Follow the disassembly procedure in the numerical order given.

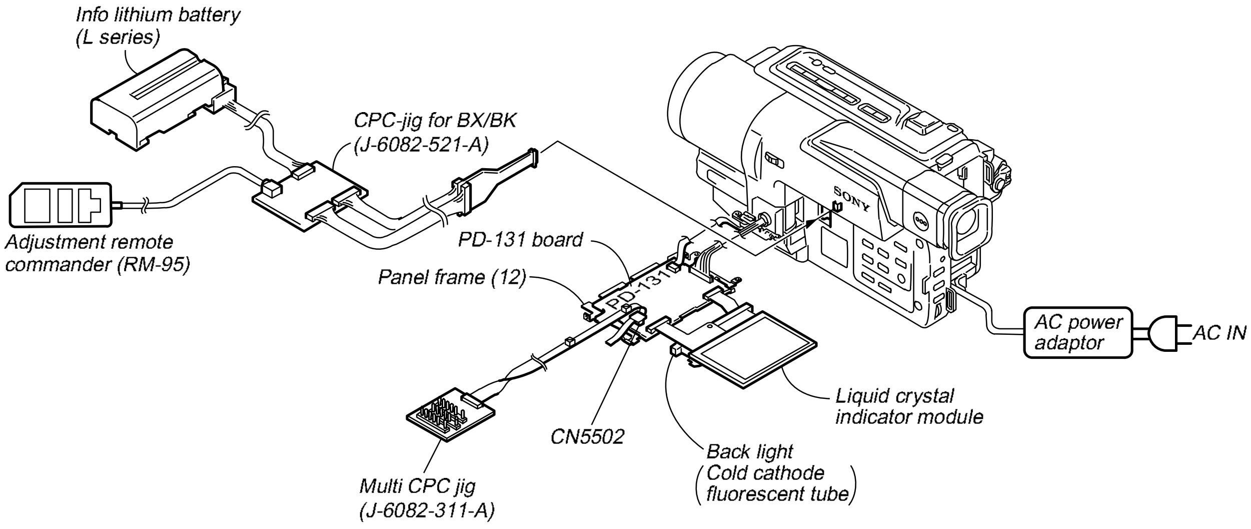
2-1. VIDEO LIGHT (VIDEO LIGHT MODEL)


③ Remove in the direction
of the arrow Ⓐ.
Ⓐ
① Push in the dent
inside hole with
wire tip.
④ Halogen lamp
② Video light

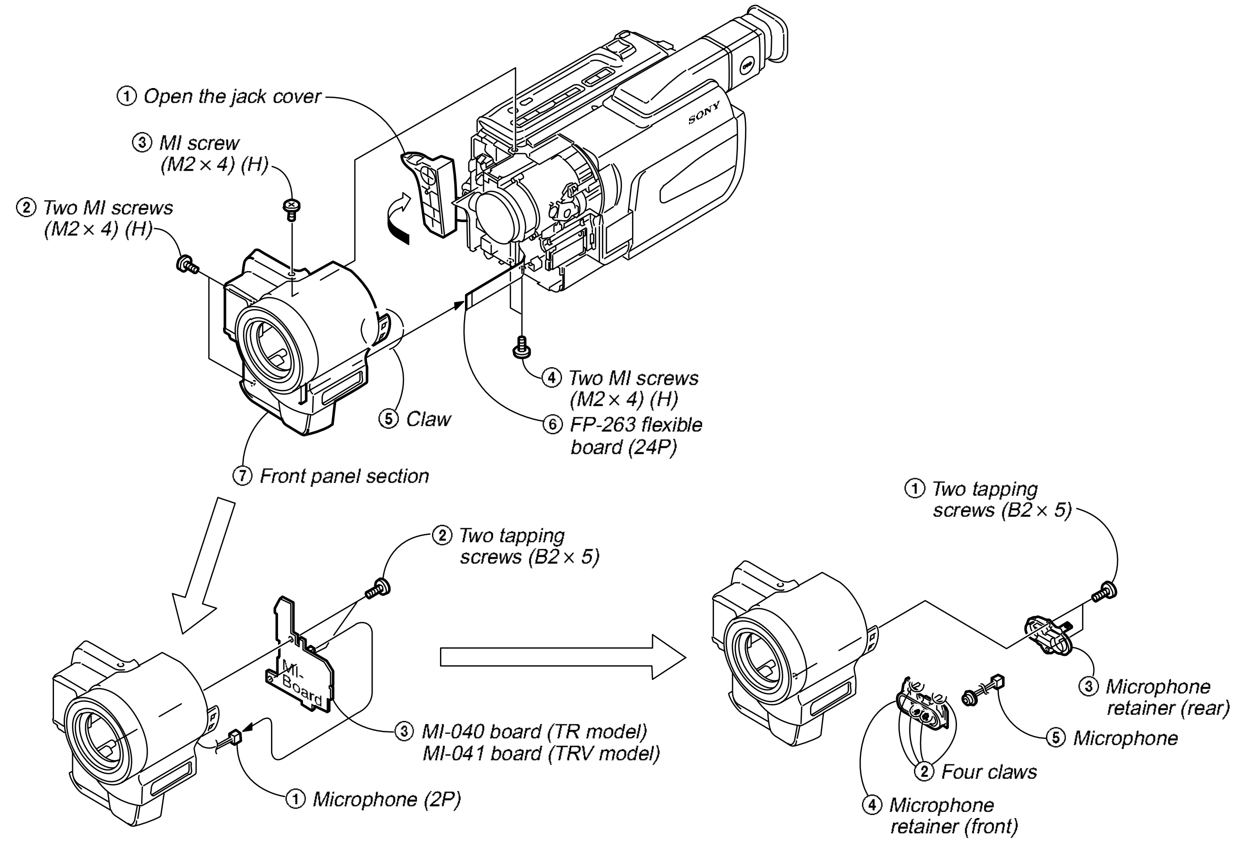
2-2. LCD SECTION (PD-131 BOARD) (TRV MODEL)


③ Five claws
④ P cabinet C (12)
② MI screw (M2 × 4) (H)
Ⓐ
⑤ Two tapping screws (B2 × 7)
SONY
PD-131
⑨ PD-131 board, Panel frame (12)
⑧ Back light (Cold cathode fluorescent tube)
⑦ Liquid crystal indicator module
Ⓐ
⑥ P cabinet M (12) assembly
① Two tapping screws (B2 × 5)

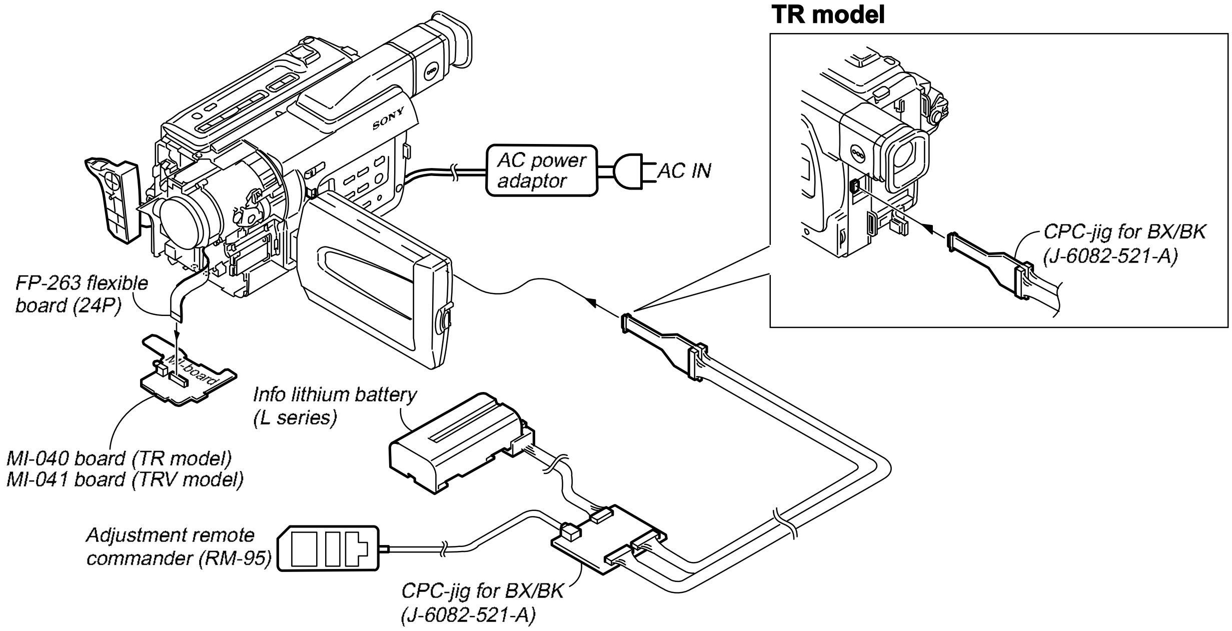
[PD-131 BOARD SERVICE POSITION]


Info lithium battery (L series)
CPC-jig for BX/BK (J-6082-521-A)
Adjustment remote commander (RM-95)
SONY
PD-131 board
Panel frame (12)
PD-131
AC power adaptor
AC IN
Liquid crystal indicator module
CN5502
Back light (Cold cathode fluorescent tube)
Multi CPC jig (J-6082-311-A)

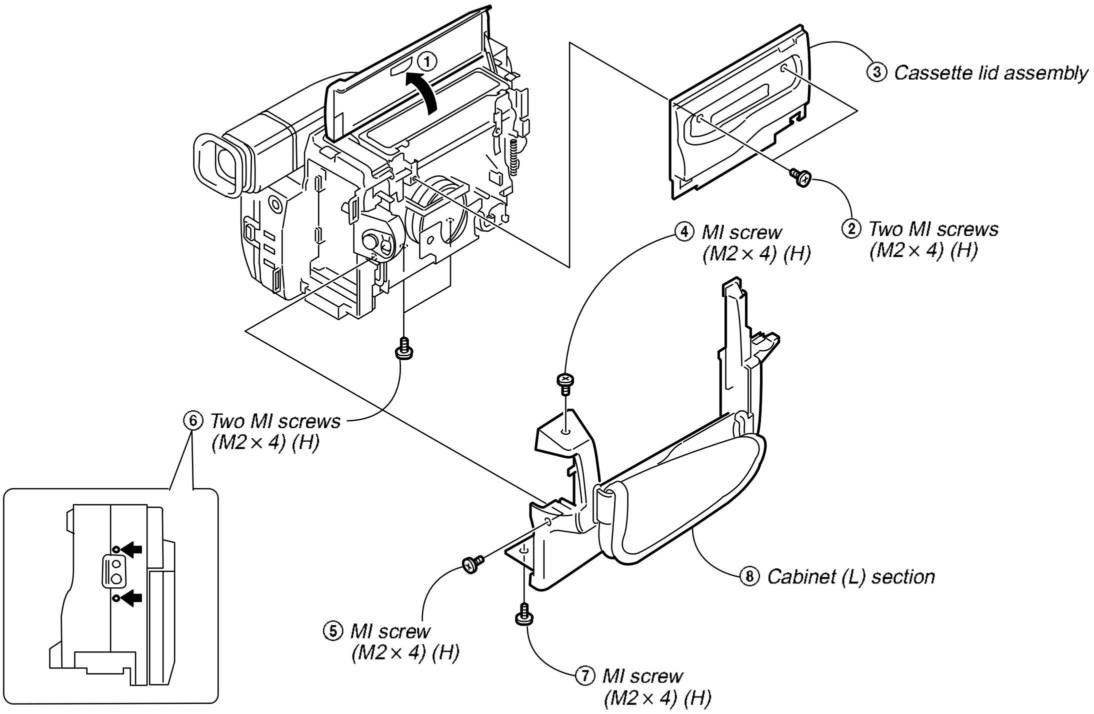
2-3. FRONT PANEL SECTION, MI-040/041 BOARD


① Open the jack cover
③ MI screw (M2 × 4) (H)
② Two MI screws (M2 × 4) (H)
SONY
④ Two MI screws (M2 × 4) (H)
⑤ Claw
⑥ FP-263 flexible board (24P)
⑦ Front panel section
② Two tapping screws (B2 × 5)
MI-Board
③ MI-040 board (TR model)
MI-041 board (TRV model)
① Microphone (2P)
① Two tapping screws (B2 × 5)
③ Microphone retainer (rear)
⑤ Microphone
② Four claws
④ Microphone retainer (front)

[MI-040/041 BOARD SERVICE POSITION]

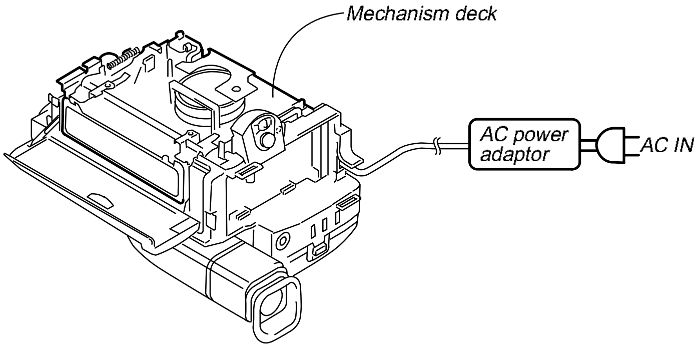

TR model
SONY
AC power adaptor
AC IN
CPC-jig for BX/BK
(J-6082-521-A)
FP-263 flexible board (24P)
MI-board
Info lithium battery
(L series)
MI-040 board (TR model)
MI-041 board (TRV model)
Adjustment remote commander (RM-95)
CPC-jig for BX/BK
(J-6082-521-A)

2-4. CABINET (L) SECTION

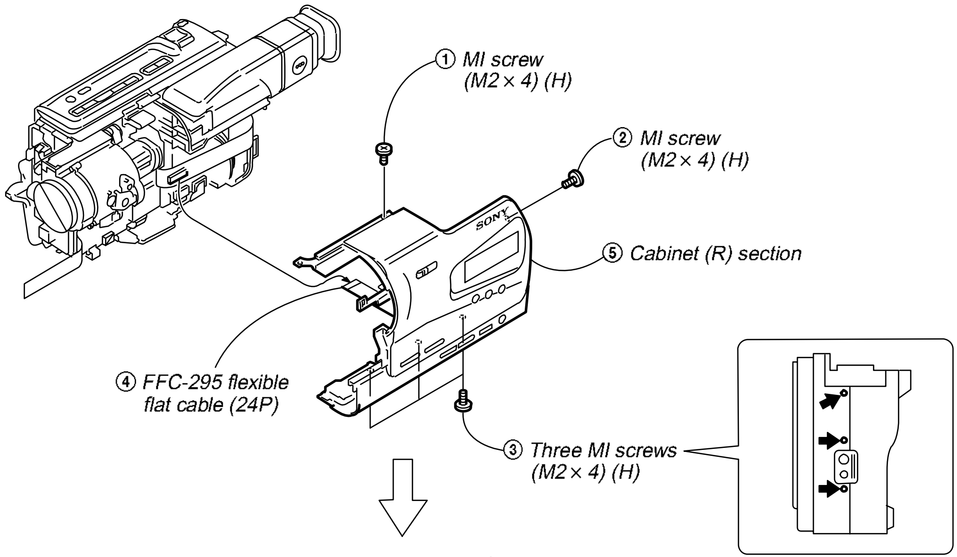

①
③ Cassette lid assembly
④ MI screw (M2 × 4) (H)
② Two MI screws (M2 × 4) (H)
⑥ Two MI screws (M2 × 4) (H)
⑧ Cabinet (L) section
⑤ MI screw (M2 × 4) (H)
⑦ MI screw (M2 × 4) (H)

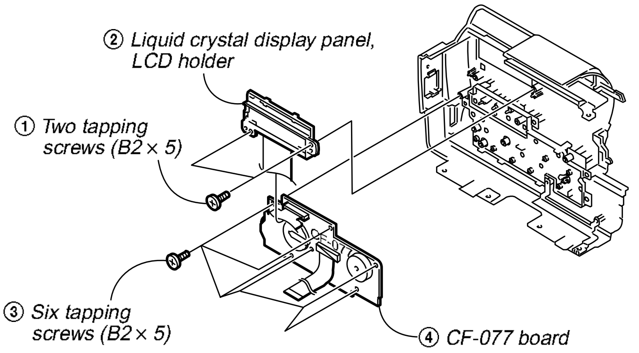
[MECHANISM DECK SERVICE POSITION]

Note: *Use the parts only which can be removed easily from outside of the mechanism deck.*

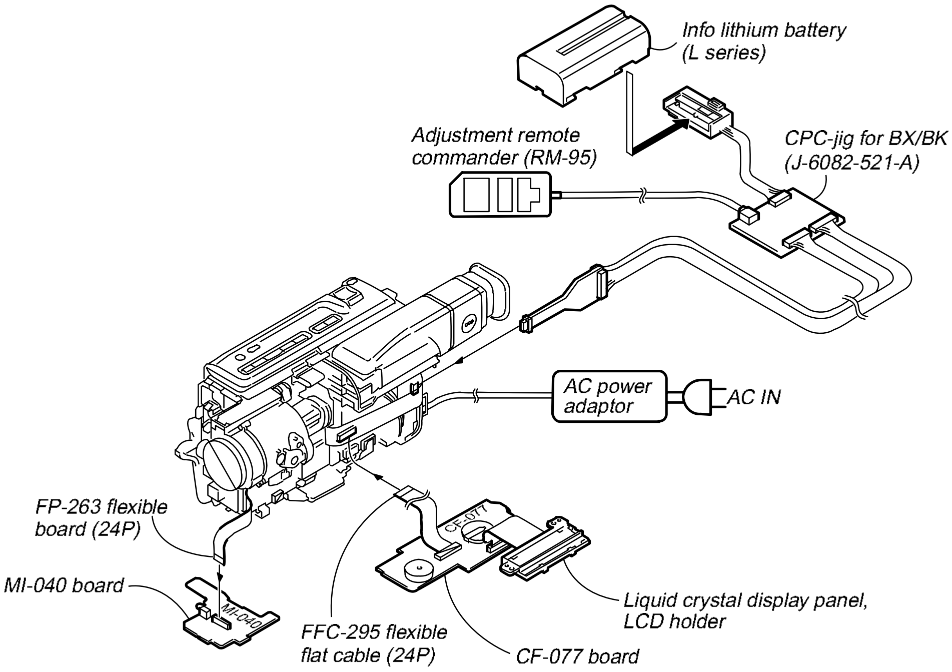

Mechanism deck
AC power adaptor
AC IN

2-5. CABINET (R) SECTION (CF-077 BOARD) (TR MODEL)

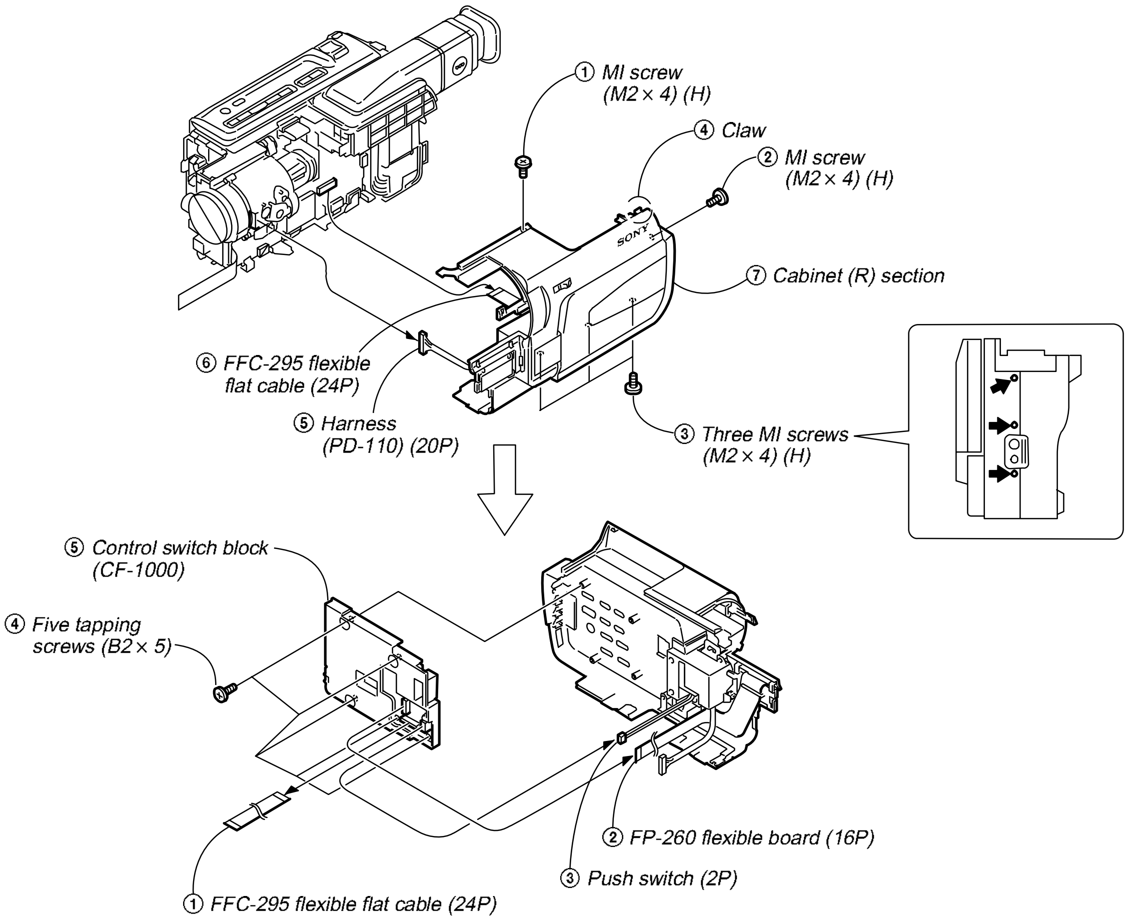

① MI screw (M2 × 4) (H)
② MI screw (M2 × 4) (H)
⑤ Cabinet (R) section
④ FFC-295 flexible flat cable (24P)
③ Three MI screws (M2 × 4) (H)


② Liquid crystal display panel, LCD holder
① Two tapping screws (B2 × 5)
③ Six tapping screws (B2 × 5)
④ CF-077 board

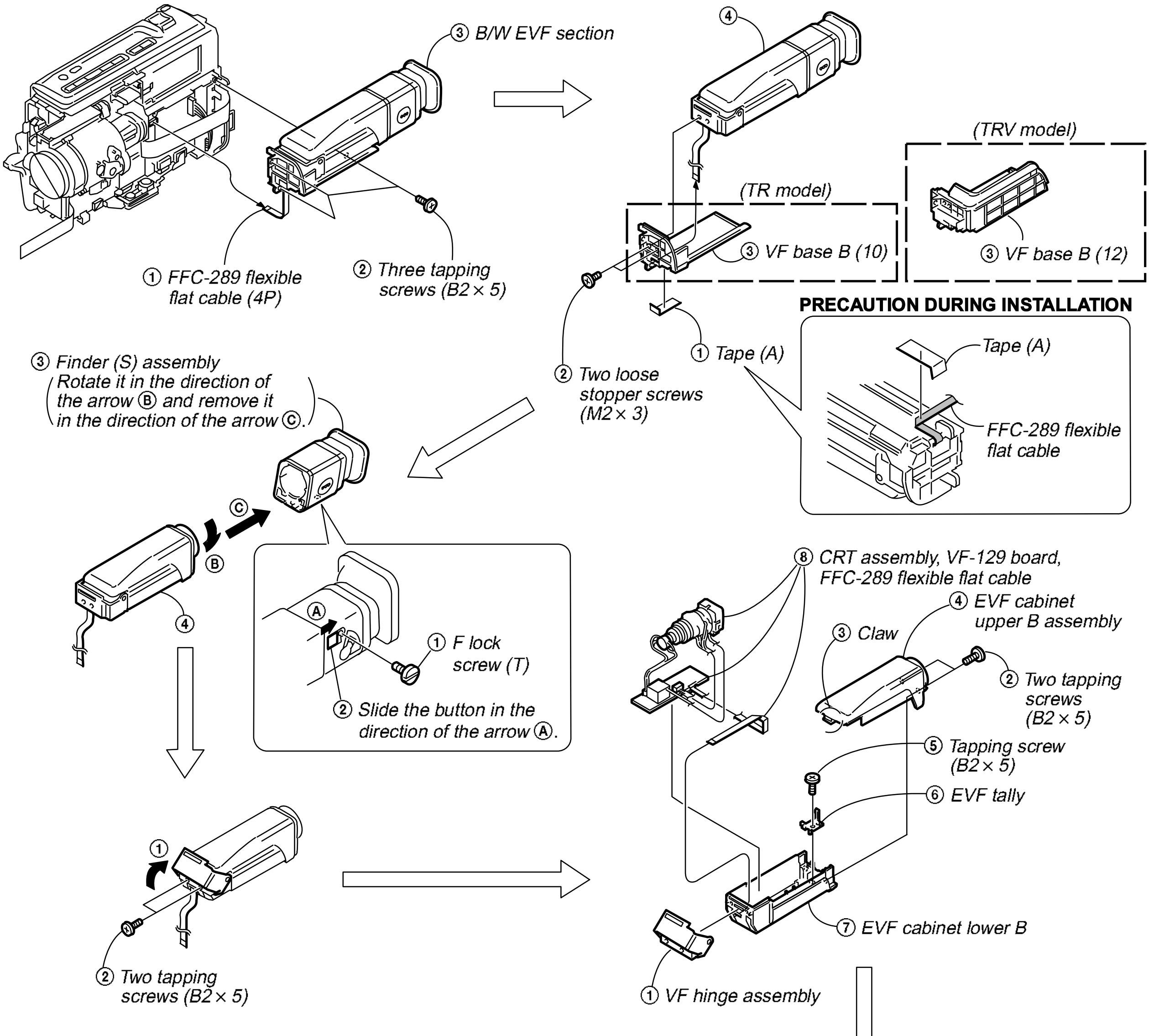
[CF-077, MI-040 BOARDS SERVICE POSITION]


Info lithium battery (L series)
Adjustment remote commander (RM-95)
CPC-jig for BX/BK (J-6082-521-A)
AC power adaptor
AC IN
FP-263 flexible board (24P)
MI-040 board
MI-040
CF-077
FFC-295 flexible flat cable (24P)
CF-077 board
Liquid crystal display panel, LCD holder

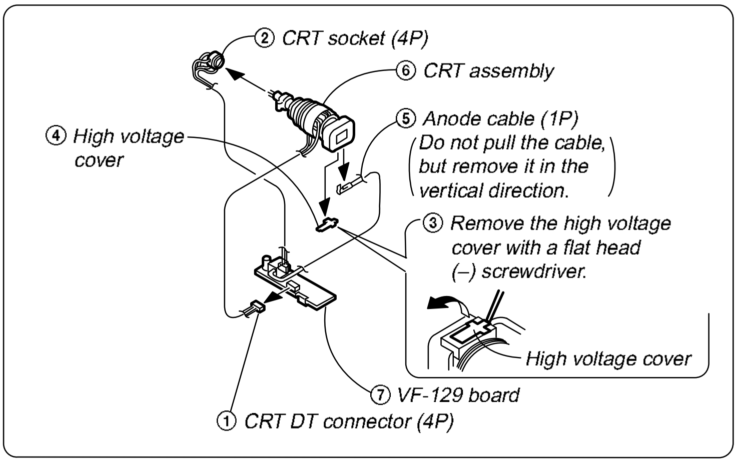
2-6. CABINET (R) SECTION [CONTROL SWITCH BLOCK (CF-1000)] (TRV MODEL)


① MI screw (M2 × 4) (H)
④ Claw
② MI screw (M2 × 4) (H)
SONY
⑦ Cabinet (R) section
⑥ FFC-295 flexible flat cable (24P)
⑤ Harness (PD-110) (20P)
③ Three MI screws (M2 × 4) (H)
⑤ Control switch block (CF-1000)
④ Five tapping screws (B2 × 5)
② FP-260 flexible board (16P)
③ Push switch (2P)
① FFC-295 flexible flat cable (24P)

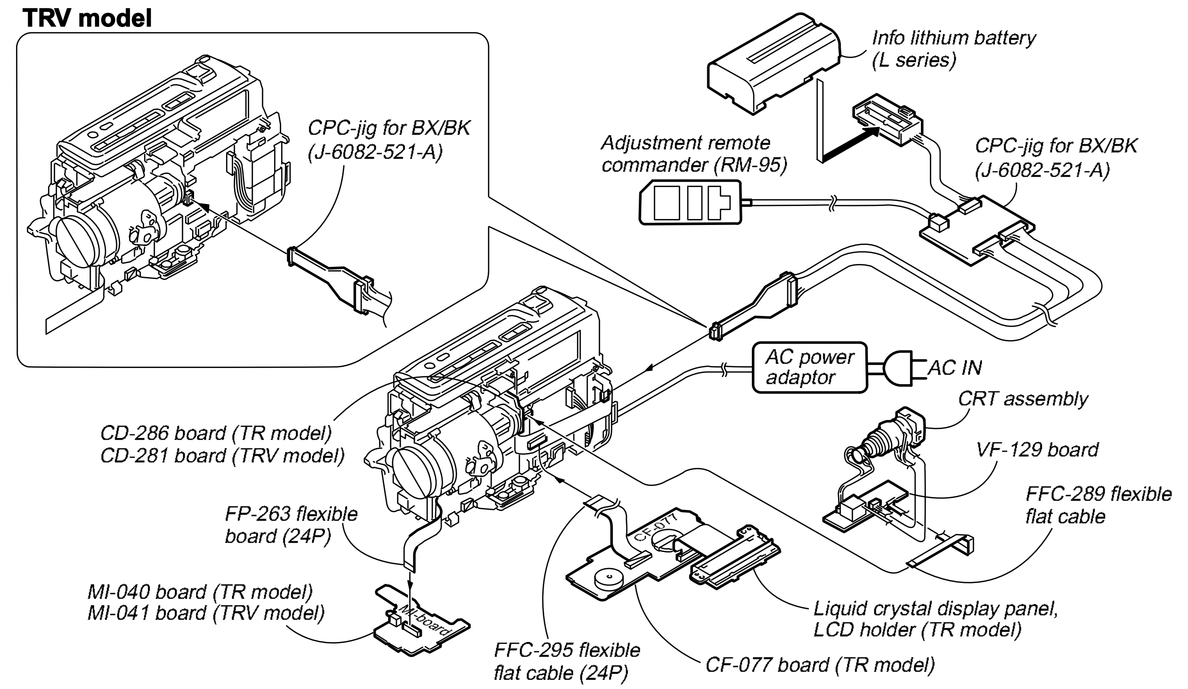
2-7. VF-129 BOARD (B/W EVF MODEL)


③ B/W EVF section
① FFC-289 flexible flat cable (4P)
② Three tapping screws (B2 × 5)
④
(TRV model)
(TR model)
③ VF base B (10)
③ VF base B (12)
① Tape (A)
② Two loose stopper screws (M2 × 3)
PRECAUTION DURING INSTALLATION
Tape (A)
FFC-289 flexible flat cable
③ Finder (S) assembly
Rotate it in the direction of the arrow Ⓑ and remove it in the direction of the arrow Ⓒ.
Ⓒ
Ⓑ
④
Ⓐ
① F lock screw (T)
② Slide the button in the direction of the arrow Ⓐ.
①
② Two tapping screws (B2 × 5)
⑧ CRT assembly, VF-129 board, FFC-289 flexible flat cable
④ EVF cabinet upper B assembly
③ Claw
② Two tapping screws (B2 × 5)
⑤ Tapping screw (B2 × 5)
⑥ EVF tally
⑦ EVF cabinet lower B
① VF hinge assembly

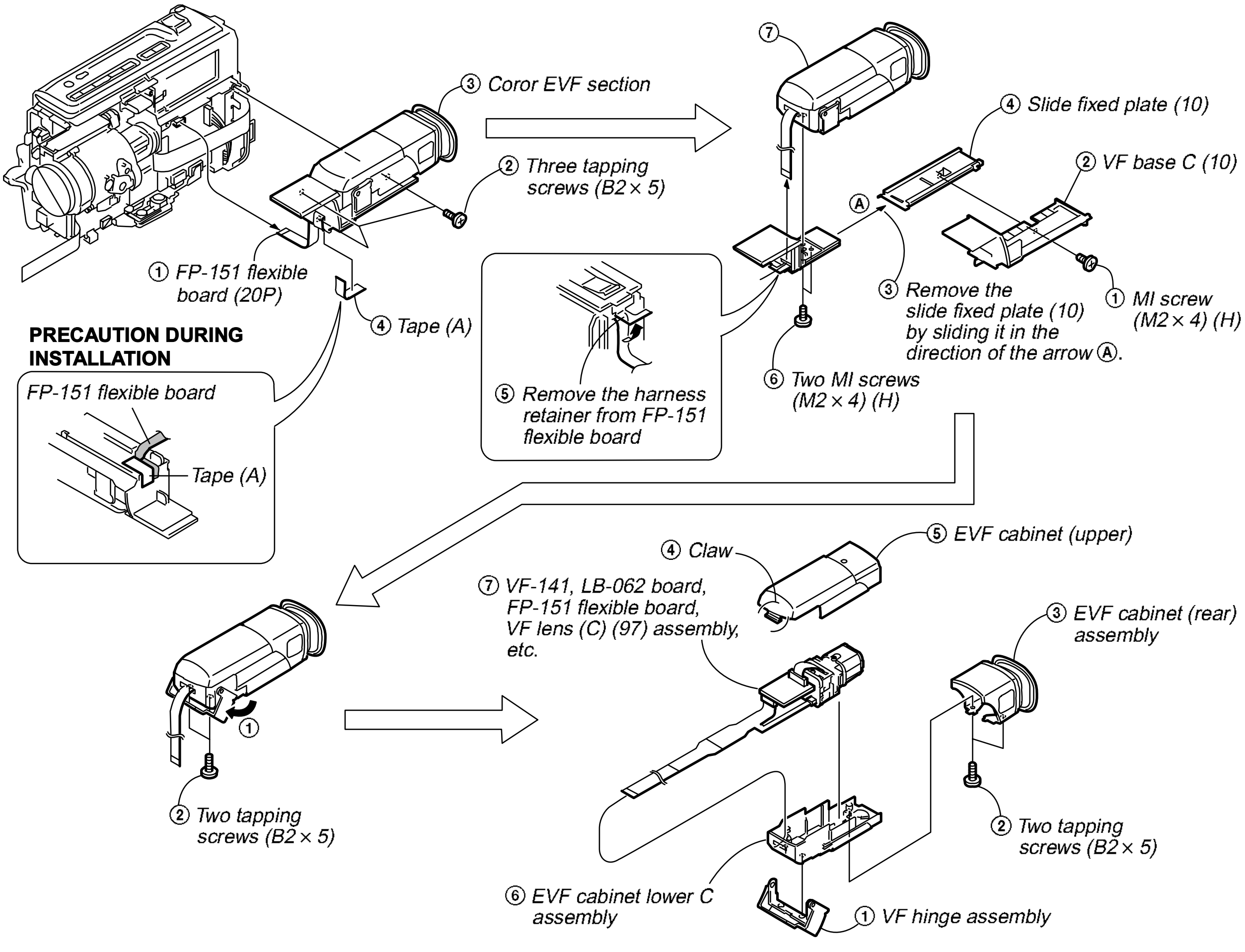
REMOVING THE CRT ASSEMBLY AND VF-129 BOARD


② CRT socket (4P)
⑥ CRT assembly
⑤ Anode cable (1P)
Do not pull the cable, but remove it in the vertical direction.
④ High voltage cover
③ Remove the high voltage cover with a flat head (–) screwdriver.
High voltage cover
⑦ VF-129 board
① CRT DT connector (4P)

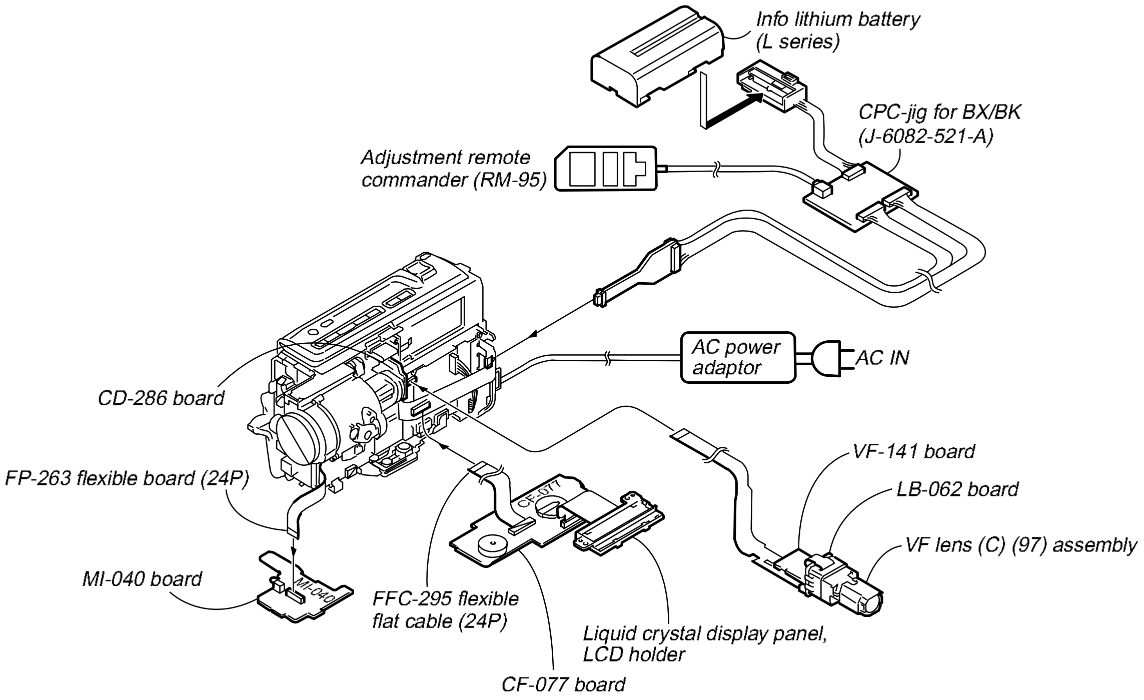
[VF-129, CD-286/281, CF-077, MI-040/041 BOARDS SERVICE POSITION]


TRV model
CPC-jig for BX/BK
(J-6082-521-A)
Info lithium battery
(L series)
Adjustment remote
commander (RM-95)
CPC-jig for BX/BK
(J-6082-521-A)
AC power
adaptor
AC IN
CRT assembly
VF-129 board
FFC-289 flexible
flat cable
CD-286 board (TR model)
CD-281 board (TRV model)
FP-263 flexible
board (24P)
MI-040 board (TR model)
MI-041 board (TRV model)
MI-board
CF-077
Liquid crystal display panel,
LCD holder (TR model)
FFC-295 flexible
flat cable (24P)
CF-077 board (TR model)

2-8. VF-141, LB-062 BOARDS (COLOR EVF MODEL/TR818)

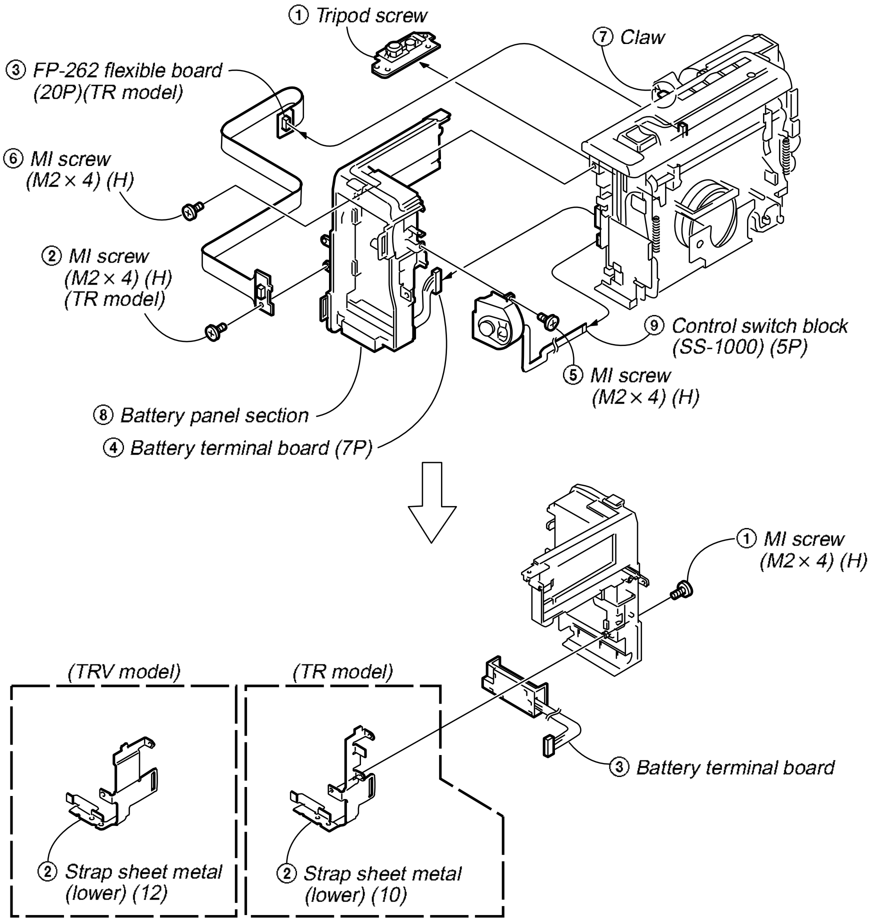

③ Coror EVF section
② Three tapping
screws (B2 × 5)
① FP-151 flexible
board (20P)
④ Tape (A)
PRECAUTION DURING
INSTALLATION
FP-151 flexible board
Tape (A)
⑤ Remove the harness
retainer from FP-151
flexible board
⑦
④ Slide fixed plate (10)
② VF base C (10)
Ⓐ
③ Remove the
slide fixed plate (10)
by sliding it in the
direction of the arrow Ⓐ.
① MI screw
(M2 × 4) (H)
⑥ Two MI screws
(M2 × 4) (H)
①
② Two tapping
screws (B2 × 5)
④ Claw
⑤ EVF cabinet (upper)
⑦ VF-141, LB-062 board,
FP-151 flexible board,
VF lens (C) (97) assembly,
etc.
③ EVF cabinet (rear)
assembly
② Two tapping
screws (B2 × 5)
⑥ EVF cabinet lower C
assembly
① VF hinge assembly

[VF-141, LB-062, CD-286, CF-077, MI-040 BOARDS SERVICE POSITION]

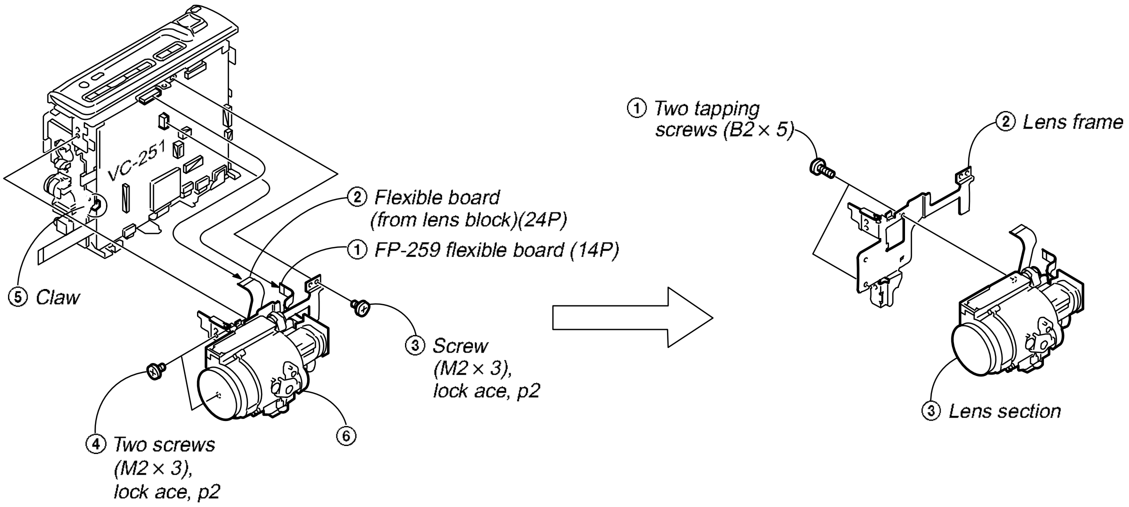

Info lithium battery
(L series)
CPC-jig for BX/BK
(J-6082-521-A)
Adjustment remote
commander (RM-95)
AC power
adaptor
AC IN
CD-286 board
FP-263 flexible board (24P)
VF-141 board
LB-062 board
VF lens (C) (97) assembly
MI-040 board
MI-040
CF-077
FFC-295 flexible
flat cable (24P)
Liquid crystal display panel,
LCD holder
CF-077 board

2-9. BATTERY PANEL SECTION (BATTERY TERMINAL BOARD)

(Remove the Cabinet (L) section reffering to section 2-4 before starting disassembling.)

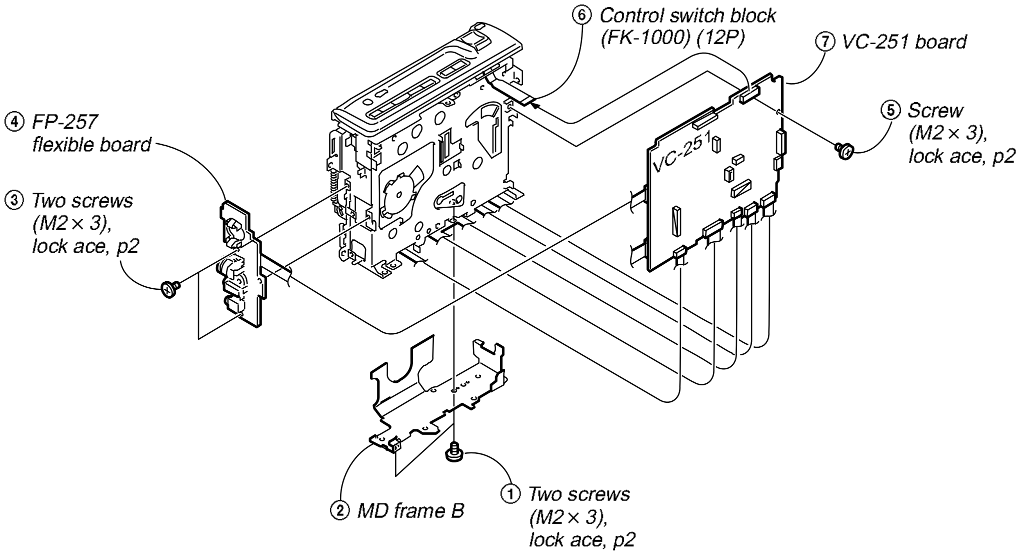

① Tripod screw
⑦ Claw
③ FP-262 flexible board
(20P)(TR model)
⑥ MI screw
(M2 × 4) (H)
② MI screw
(M2 × 4) (H)
(TR model)
⑨ Control switch block
(SS-1000) (5P)
⑤ MI screw
(M2 × 4) (H)
⑧ Battery panel section
④ Battery terminal board (7P)
① MI screw
(M2 × 4) (H)
(TRV model)
(TR model)
③ Battery terminal board
② Strap sheet metal
(lower) (12)
② Strap sheet metal
(lower) (10)

2-10. LENS SECTION



① Two tapping screws (B2 × 5)
② Lens frame
③ Lens section
VC-251
② Flexible board (from lens block)(24P)
① FP-259 flexible board (14P)
⑤ Claw
③ Screw (M2 × 3), lock ace, p2
④ Two screws (M2 × 3), lock ace, p2
⑥

2-11. VC-251 BOARD



⑥ Control switch block (FK-1000) (12P)
⑦ VC-251 board
④ FP-257 flexible board
⑤ Screw (M2 × 3), lock ace, p2
③ Two screws (M2 × 3), lock ace, p2
VC-251
② MD frame B
① Two screws (M2 × 3), lock ace, p2

[SERVICE POSITION TO CHECK THE VTR SECTION]

Connection to Check the VTR Section

To check the VTR section, set the VTR to the "Forced VTR power ON" mode.
Operate the VTR functions using the adjustment remote commander (with the HOLD switch set in the OFF position).

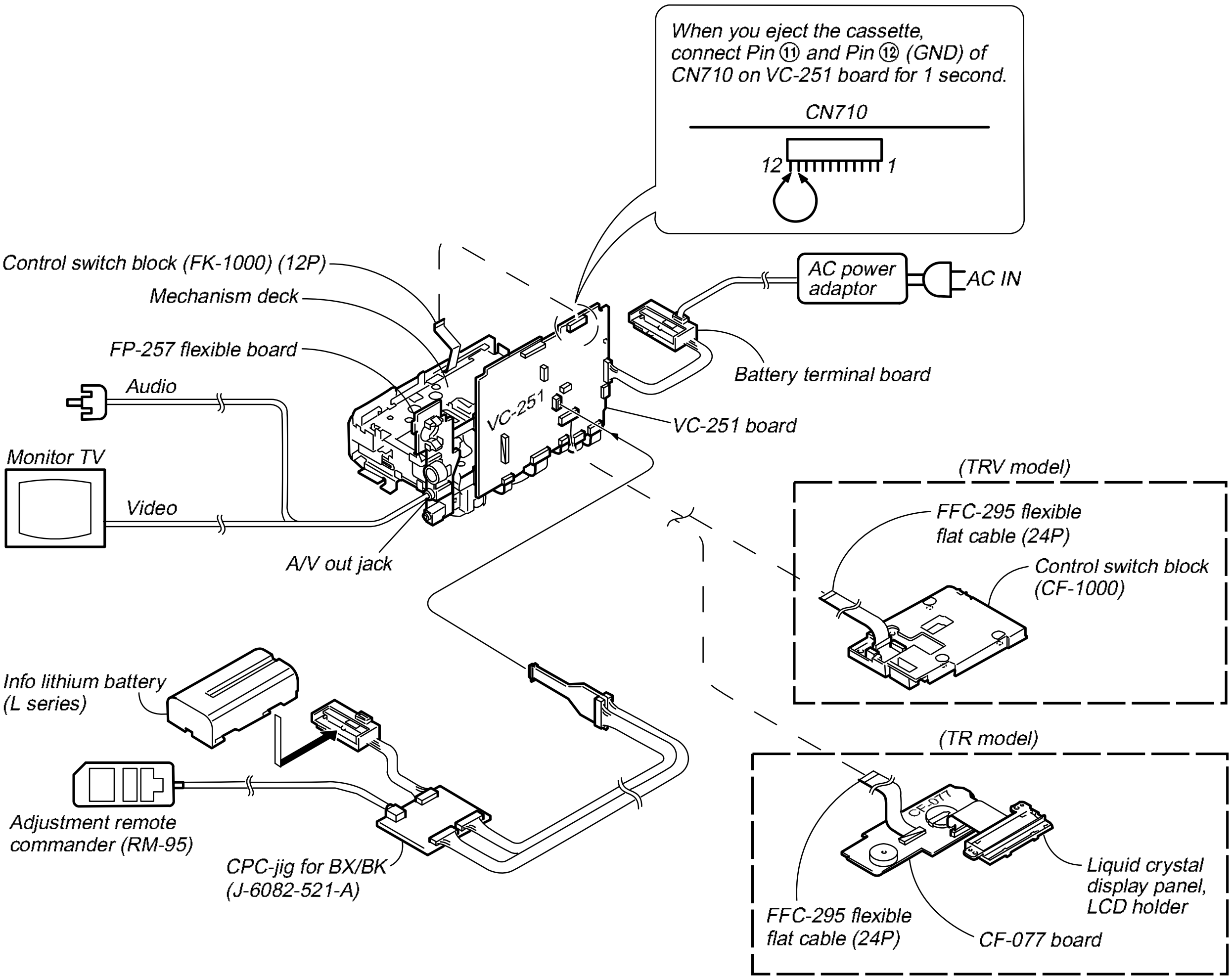
Setting the "Forced VTR Power ON" mode

1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 10, set data: 02, and press the PAUSE button of the adjustment remote commander.

Exiting the "Forced VTR Power ON" mode

1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 10, set data: 00, and press the PAUSE button of the adjustment remote commander.
3) Select page: 0, address: 01, and set data: 00.

Note: If the machine malfunctions (the operating mode changes by itself), connect the FK-1000 block, CF-1000 block/CF-077 board.


When you eject the cassette, connect Pin ⑪ and Pin ⑫ (GND) of CN710 on VC-251 board for 1 second.
CN710
12
1
Control switch block (FK-1000) (12P)
Mechanism deck
FP-257 flexible board
AC power adaptor
AC IN
Battery terminal board
Audio
VC-251
VC-251 board
Monitor TV
Video
A/V out jack
(TRV model)
FFC-295 flexible flat cable (24P)
Control switch block (CF-1000)
Info lithium battery (L series)
(TR model)
CF-077
Adjustment remote commander (RM-95)
CPC-jig for BX/BK (J-6082-521-A)
Liquid crystal display panel, LCD holder
FFC-295 flexible flat cable (24P)
CF-077 board

[SERVICE POSITION TO CHECK THE CAMERA SECTION]

Connection to Check the Camera Section

To check the camera section, set the camera to the "Forced camera power ON" mode.

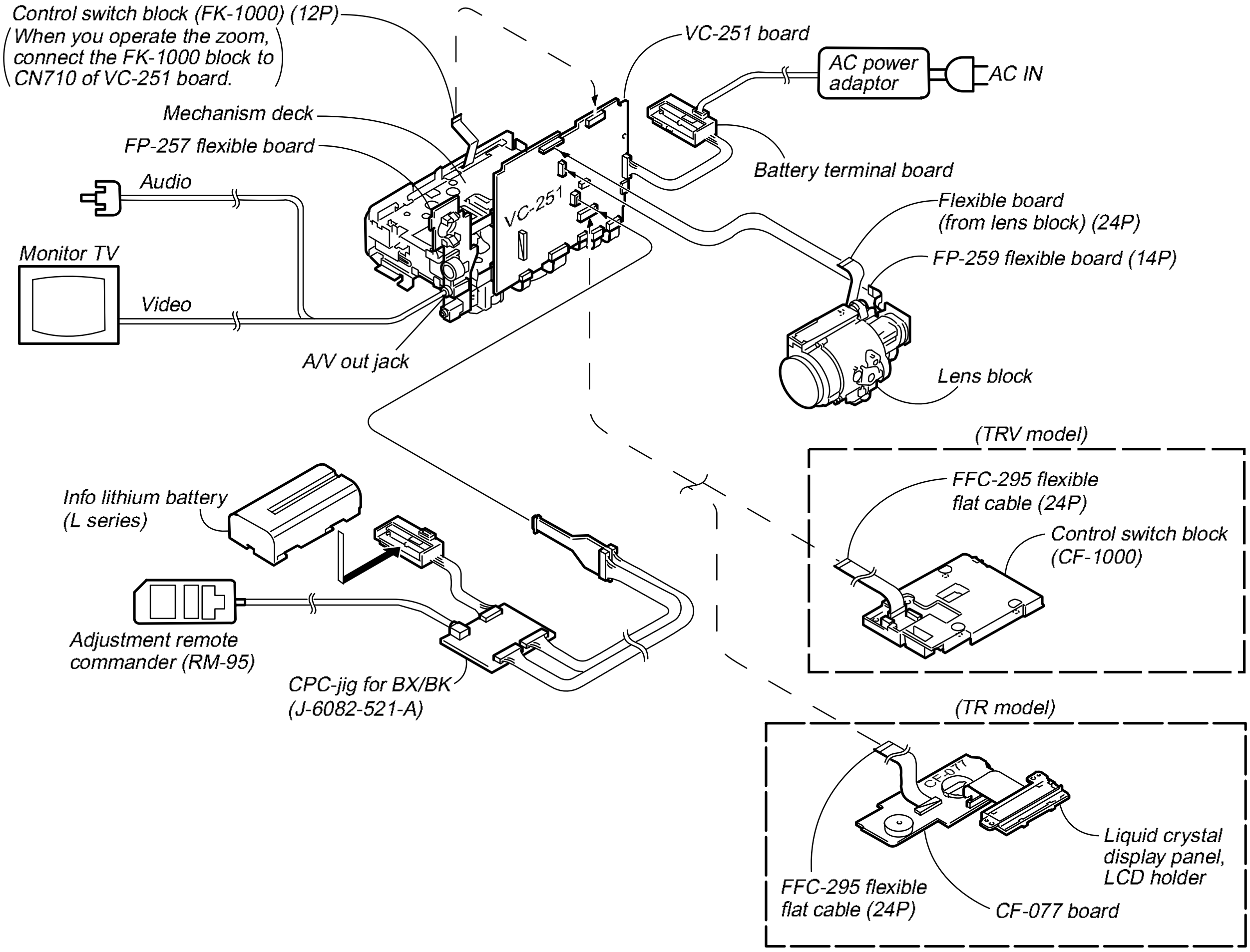
Setting the "Forced Camera Power ON" mode

1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 10, set data: 01, and press the PAUSE button of the adjustment remote commander.

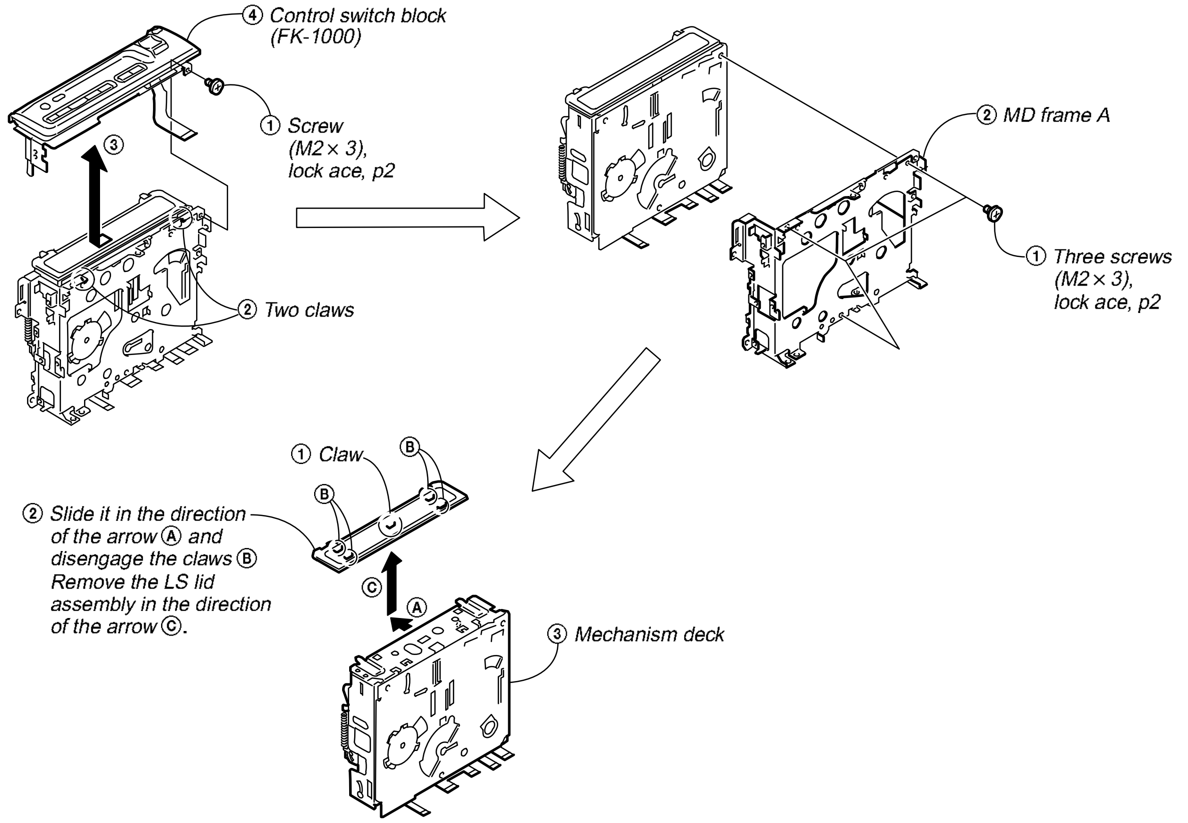
Exiting the "Forced Camera Power ON" mode

1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 10, set data: 00, and press the PAUSE button of the adjustment remote commander.
3) Select page: 0, address: 01, and set data: 00.

Note: If the machine malfunctions (the operating mode changes by itself), connect the FK-1000 block, CF-1000 block/CF-077 board.

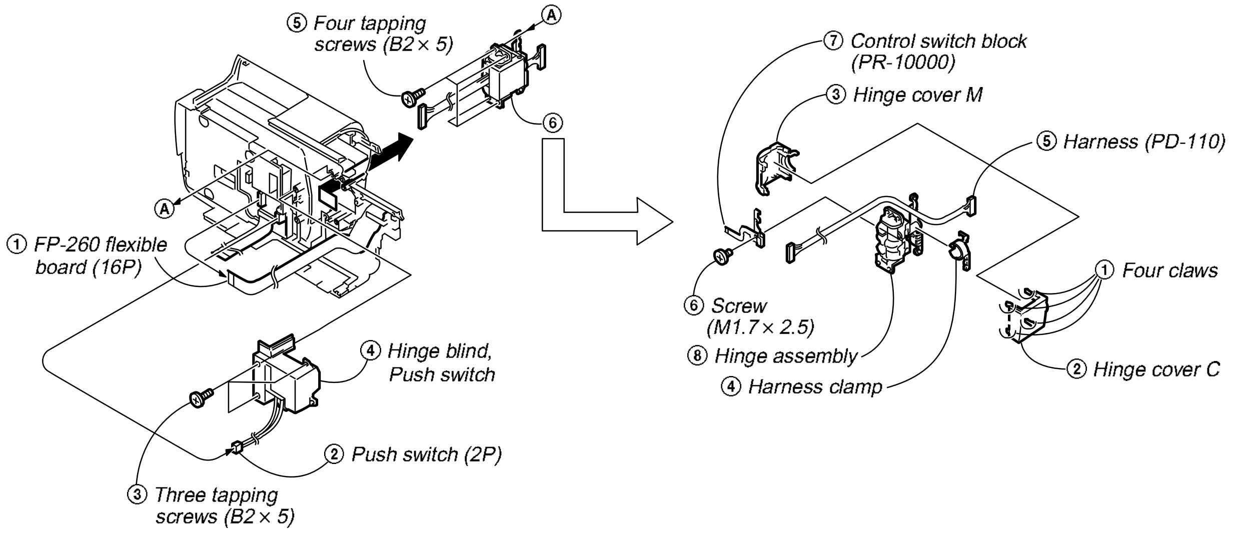

Control switch block (FK-1000) (12P)
(When you operate the zoom, connect the FK-1000 block to CN710 of VC-251 board.)
Mechanism deck
FP-257 flexible board
Audio
Monitor TV
Video
A/V out jack
VC-251 board
VC-251
AC power adaptor
AC IN
Battery terminal board
Flexible board (from lens block) (24P)
FP-259 flexible board (14P)
Lens block
Info lithium battery (L series)
Adjustment remote commander (RM-95)
CPC-jig for BX/BK (J-6082-521-A)
(TRV model)
FFC-295 flexible flat cable (24P)
Control switch block (CF-1000)
(TR model)
CF-077
Liquid crystal display panel, LCD holder
FFC-295 flexible flat cable (24P)
CF-077 board

2-12. MECHANISM DECK

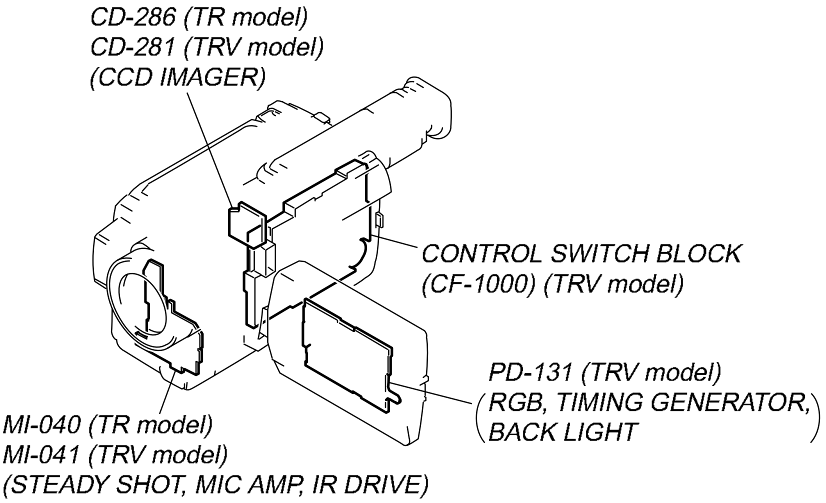

④ Control switch block (FK-1000)
① Screw (M2 × 3), lock ace, p2
③
② Two claws
② MD frame A
① Three screws (M2 × 3), lock ace, p2
① Claw
Ⓑ
Ⓑ
② Slide it in the direction of the arrow Ⓐ and disengage the claws Ⓑ Remove the LS lid assembly in the direction of the arrow Ⓒ.
Ⓒ
Ⓐ
③ Mechanism deck

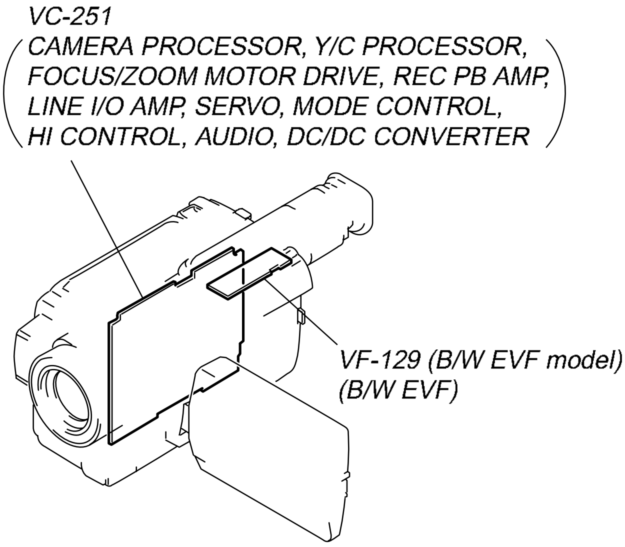
2-13. HINGE ASSEMBLY (TRV MODEL)

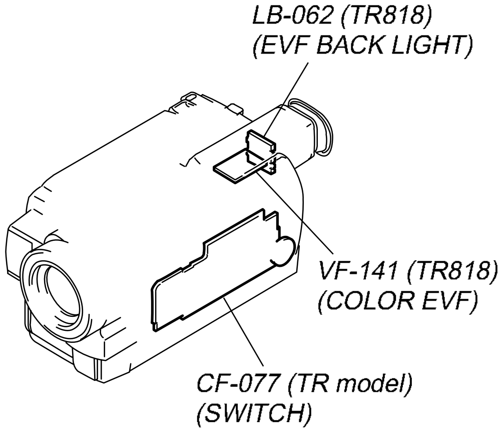
(Remove the LCD unit reffering to section 2-2 before starting disassembling.)


⑤ Four tapping screws (B2 × 5)
Ⓐ
⑥
Ⓐ
① FP-260 flexible board (16P)
④ Hinge blind, Push switch
② Push switch (2P)
③ Three tapping screws (B2 × 5)
⑦ Control switch block (PR-10000)
③ Hinge cover M
⑤ Harness (PD-110)
① Four claws
⑥ Screw (M1.7 × 2.5)
⑧ Hinge assembly
④ Harness clamp
② Hinge cover C

2-14. CIRCUIT BOARDS LOCATION

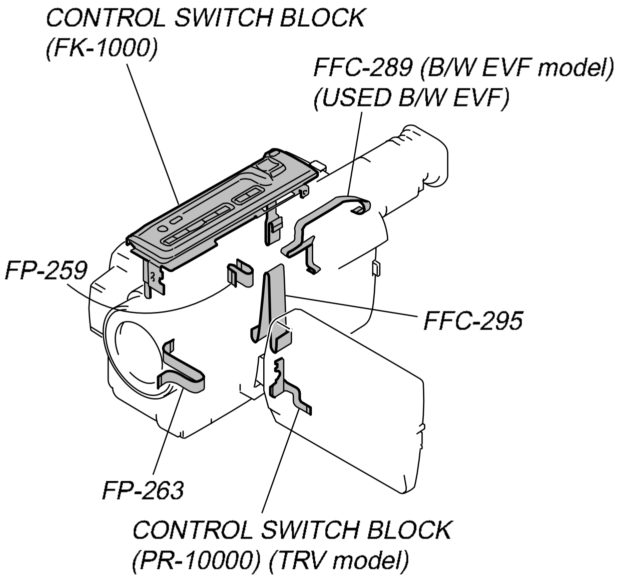

CD-286 (TR model)
CD-281 (TRV model)
(CCD IMAGER)
CONTROL SWITCH BLOCK
(CF-1000) (TRV model)
PD-131 (TRV model)
(RGB, TIMING GENERATOR, BACK LIGHT)
MI-040 (TR model)
MI-041 (TRV model)
(STEADY SHOT, MIC AMP, IR DRIVE)

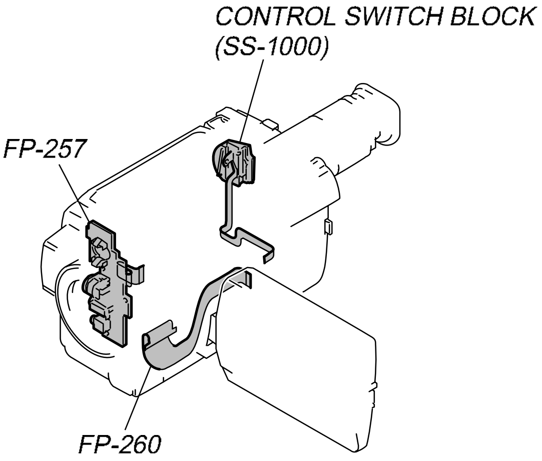

VC-251
(CAMERA PROCESSOR, Y/C PROCESSOR, FOCUS/ZOOM MOTOR DRIVE, REC PB AMP, LINE I/O AMP, SERVO, MODE CONTROL, HI CONTROL, AUDIO, DC/DC CONVERTER)
VF-129 (B/W EVF model)
(B/W EVF)

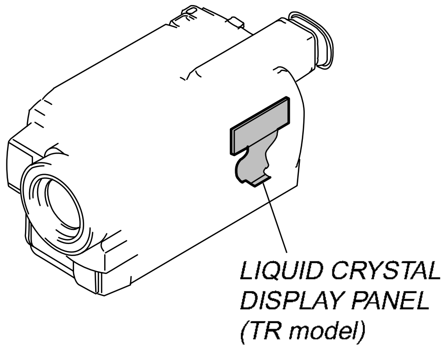

LB-062 (TR818)
(EVF BACK LIGHT)
VF-141 (TR818)
(COLOR EVF)
CF-077 (TR model)
(SWITCH)

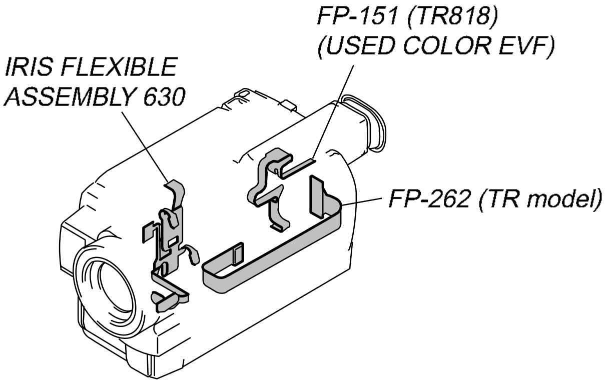
2-15. FLEXIBLE BOARDS LOCATION

The flexible boards contained in the mechanism deck are not shown.


CONTROL SWITCH BLOCK
(FK-1000)
FFC-289 (B/W EVF model)
(USED B/W EVF)
FP-259
FFC-295
FP-263
CONTROL SWITCH BLOCK
(PR-10000) (TRV model)


CONTROL SWITCH BLOCK
(SS-1000)
FP-257
FP-260

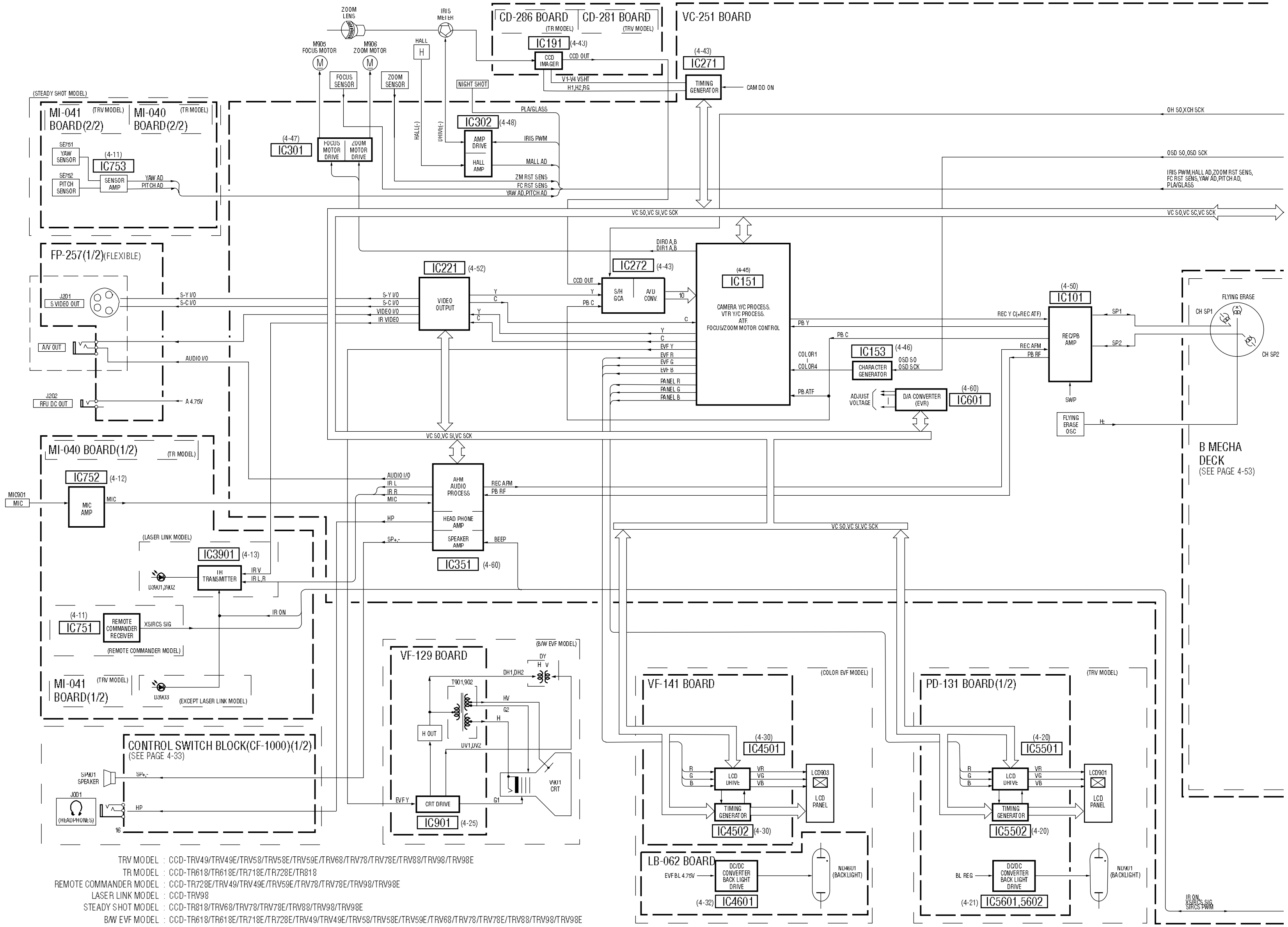

LIQUID CRYSTAL
DISPLAY PANEL
(TR model)


FP-151 (TR818)
(USED COLOR EVF)
IRIS FLEXIBLE
ASSEMBLY 630
FP-262 (TR model)

SECTION 3
BLOCK DIAGRAMS

3-1. OVERALL BLOCK DIAGRAM (1/2)

( ) : Page No. shown in ( ) indicates the page to refer on the schematic diagram.

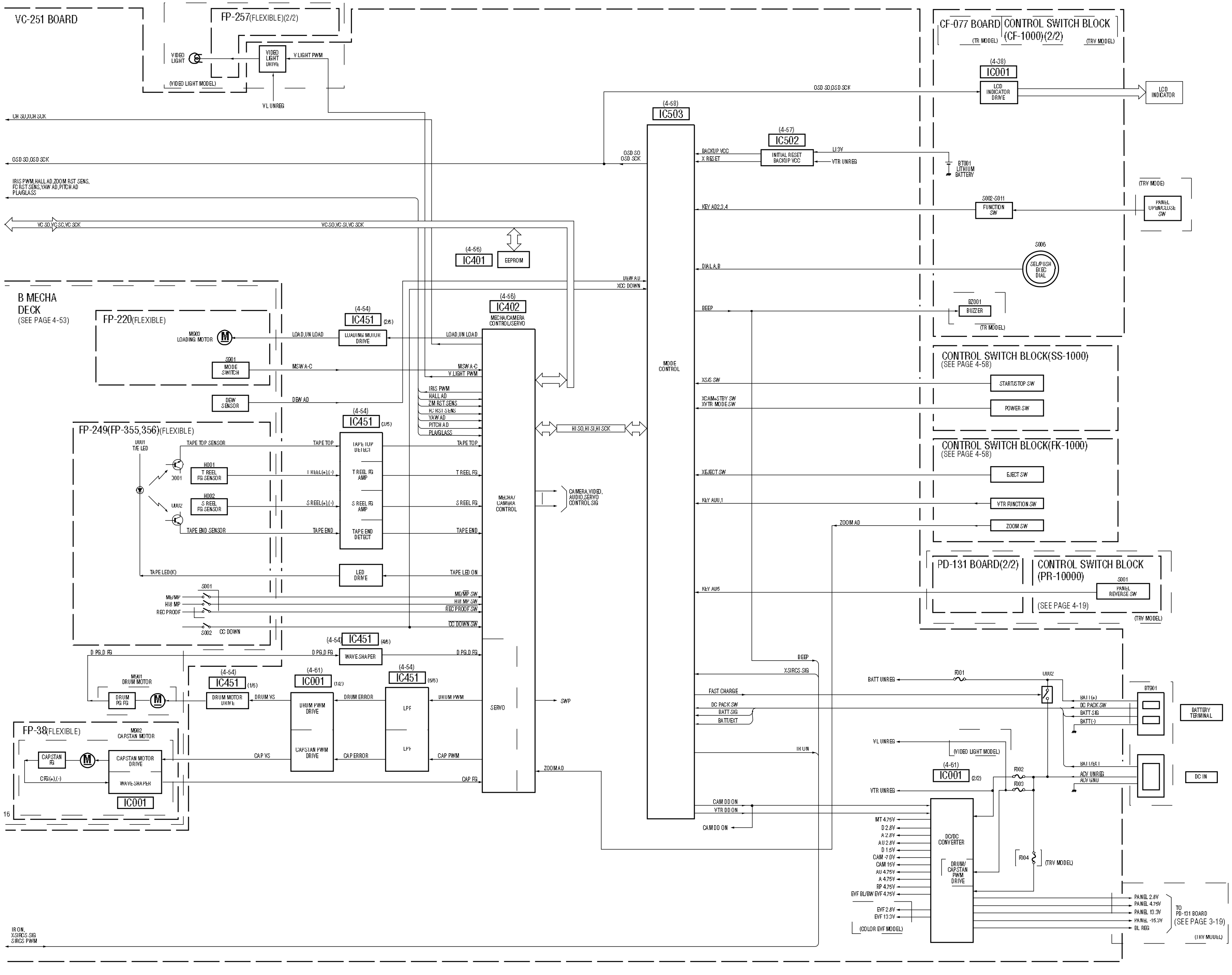

ZOOM LENS
IRIS METER
M905 FOCUS MOTOR
M906 ZOOM MOTOR
HALL
FOCUS SENSOR
ZOOM SENSOR
NIGHT SHOT
CD-286 BOARD (TR MODEL)
CD-281 BOARD (TRV MODEL)
IC191 (4-43)
CCD IMAGER
CCD OUT
V1-V4 VSHT
H1,H2,RG
VC-251 BOARD
IC271 (4-43)
TIMING GENERATOR
CAM DD ON
(STEADY SHOT MODEL)
MI-041 BOARD(2/2) (TRV MODEL)
MI-040 BOARD(2/2) (TR MODEL)
SE751 YAW SENSOR
SE752 PITCH SENSOR
IC753 (4-11)
SENSOR AMP
YAW AD
PITCH AD
IC301 (4-47)
FOCUS MOTOR DRIVE
ZOOM MOTOR DRIVE
IC302 (4-48)
AMP DRIVE
HALL AMP
HALL(-)
DRIVE(-)
PLA/GLASS
IRIS PWM
MALL AD
ZM RST SENS
FC RST SENS
YAW AD,PITCH AD
OH SO,XCH SCK
OSD SO,OSD SCK
IRIS PWM,HALL AD,ZOOM RST SENS, FC RST SENS,YAW AD,PITCH AD, PLA/GLASS
VC SO,VC SI,VC SCK
FP-257(1/2)(FLEXIBLE)
J201 S VIDEO OUT
S-Y I/O
S-C I/O
A/V OUT
AUDIO I/O
J202 RFU DC OUT
A 4.75V
IC221 (4-52)
VIDEO OUTPUT
VIDEO I/O
IR VIDEO
Y
C
DIR0 A,B
DIR1 A,B
IC272 (4-43)
S/H GCA
A/D CONV
10
CCD OUT
PB C
IC151 (4-45)
CAMERA Y/C PROCESS, VTR Y/C PROCESS, ATF, FOCUS/ZOOM MOTOR CONTROL
PB Y
EVF Y
EVF R
EVF G
EVF B
PANEL R
PANEL G
PANEL B
COLOR1 I COLOR4
PB ATF
IC153 (4-46)
CHARACTER GENERATOR
OSD SO
OSD SCK
ADJUST VOLTAGE
D/A CONVERTER (EVR)
IC601 (4-60)
IC101 (4-50)
REC/PB AMP
REC Y C(+REC ATF)
REC AFM
PB RF
SP1
SP2
SWP
FLYING ERASE OSC
FE
FLYING ERASE
CH SP1
CH SP2
B MECHA DECK (SEE PAGE 4-53)
MI-040 BOARD(1/2) (TR MODEL)
IC752 (4-12)
MIC AMP
MIC901 MIC
AUDIO I/O
IR L
IR R
MIC
HP
SP+,-
AFM AUDIO PROCESS
HEAD PHONE AMP
SPEAKER AMP
REC AFM
PB RF
BEEP
IC351 (4-60)
(LASER LINK MODEL)
IC3901 (4-13)
IR TRANSMITTER
IR V
IR L,R
D3901,3902
IR ON
IC751 (4-11)
REMOTE COMMANDER RECEIVER
XSIRCS SIG
(REMOTE COMMANDER MODEL)
MI-041 BOARD(1/2) (TRV MODEL)
D3903
(EXCEPT LASER LINK MODEL)
CONTROL SWITCH BLOCK(CF-1000)(1/2) (SEE PAGE 4-33)
SP901 SPEAKER
J001 (HEADPHONES)
VF-129 BOARD
(B/W EVF MODEL)
DY H V
DH1,DH2
T901,902
HV
G2
H
H OUT
DV1,DV2
V901 CRT
EVF Y
CRT DRIVE
G1
IC901 (4-25)
VF-141 BOARD (COLOR EVF MODEL)
IC4501 (4-30)
R G B
LCD DRIVE
VR VG VB
LCD903 LCD PANEL
TIMING GENERATOR
IC4502 (4-30)
LB-062 BOARD
EVF BL 4.75V
DC/DC CONVERTER BACK LIGHT DRIVE
IC4601 (4-32)
ND4601 (BACKLIGHT)
PD-131 BOARD(1/2) (TRV MODEL)
IC5501 (4-20)
LCD901 LCD PANEL
IC5502 (4-20)
BL REG
IC5601,5602 (4-21)
ND901 (BACKLIGHT)
IR ON, XSIRCS SIG, SIRCS PWM

TRV MODEL : CCD-TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E
TR MODEL : CCD-TR618/TR618E/TR718E/TR728E/TR818
REMOTE COMMANDER MODEL : CCD-TR728E/TRV49/TRV49E/TRV59E/TRV78/TRV78E/TRV98/TRV98E
LASER LINK MODEL : CCD-TRV98
STEADY SHOT MODEL : CCD-TR818/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E
B/W EVF MODEL : CCD-TR618/TR618E/TR718E/TR728E/TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E
COLOR EVF MODEL : CCD-TR818

3-2. OVERALL BLOCK DIAGRAM (2/2)

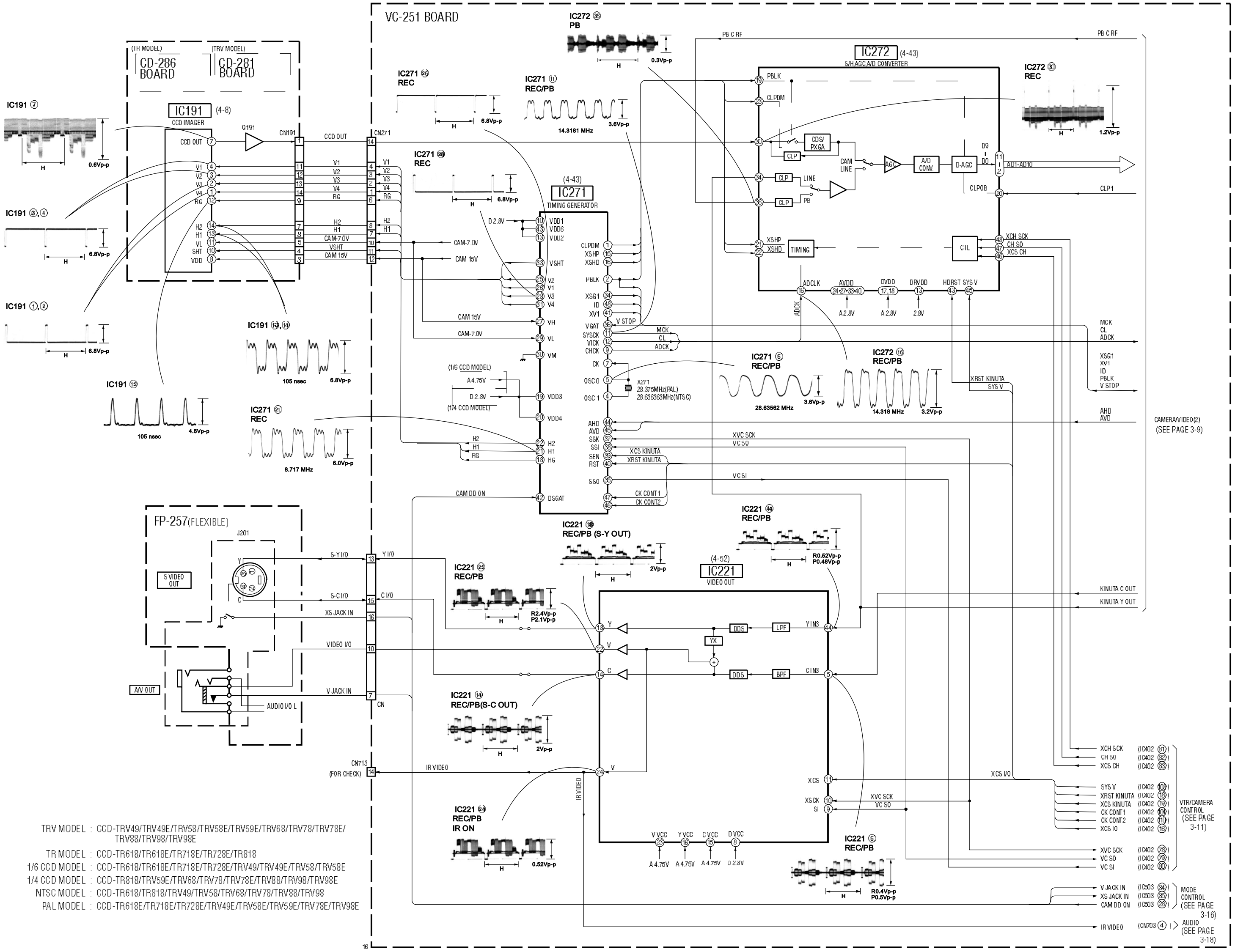
( ) : Page No. shown in ( ) indicates the page to refer on the schematic diagram.

TRV MODEL : CCD-TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E
TR MODEL : CCD-TR618/TR618E/TR718E/TR728E/TR818
VIDEO LIGHT MODEL : CCD-TR618/TR618E/TR718E/TR728E/TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E
COLOR EVF MODEL : CCD-TR818


VC-251 BOARD
FP-257(FLEXIBLE)(2/2)
VIDEO LIGHT
VIDEO LIGHT DRIVE
V LIGHT PWM
(VIDEO LIGHT MODEL)
VL UNREG
CH SO,XCH SCK
OSD SO,OSD SCK
IRIS PWM,HALL AD,ZOOM RST SENS, FC RST SENS,YAW AD,PITCH AD PLA/GLASS
VC SO,VC SC,VC SCK
VC SO,VC SI,VC SCK
(4-56)
IC401
EEPROM
B MECHA DECK
(SEE PAGE 4-53)
FP-220(FLEXIBLE)
M903 LOADING MOTOR
M
S901 MODE SWITCH
DEW SENSOR
LOAD,UN LOAD
MSW A-C
DEW AD
(4-54)
IC451 (2/5)
LOADING MOTOR DRIVE
(4-56)
IC402
MECHA/CAMERA CONTROL/SERVO
V.LIGHT PWM
IRIS PWM
HALL AD
ZM RST SENS
FC RST SENS
YAW AD
PITCH AD
PLA/GLASS
HI SO,HI SI,HI SCK
FP-249(FP-355,356)(FLEXIBLE)
D001 T/E LED
TAPE TOP SENSOR
H001 T REEL FG SENSOR
Q001
H002 S REEL FG SENSOR
Q002
TAPE END SENSOR
TAPE TOP
T REEL(+),(-)
S REEL(+),(-)
TAPE END
(4-54)
IC451 (3/5)
TAPE TOP DETECT
T REEL FG AMP
S REEL FG AMP
TAPE END DETECT
T REEL FG
S REEL FG
MECHA/ CAMERA CONTROL
CAMERA,VIDEO, AUDIO,SERVO CONTROL SIG
TAPE LED(K)
LED DRIVE
TAPE LED ON
S001
ME/MP
HI8 MP
REC PROOF
S002
CC DOWN
ME/MP SW
HI8 MP SW
REC PROOF SW
CC DOWN SW
D PG,D FG
(4-54) IC451 (4/5)
WAVE SHAPER
M901 DRUM MOTOR
DRUM PG FG
(4-54)
IC451 (1/5)
DRUM MOTOR DRIVE
DRUM VS
(4-61)
IC001 (1/2)
DRUM PWM DRIVE
DRUM ERROR
(4-54)
IC451 (5/5)
LPF
DRUM PWM
SERVO
SWP
FP-38(FLEXIBLE)
M902 CAPSTAN MOTOR
CAPSTAN FG
CAPSTAN MOTOR DRIVE
WAVE SHAPER
IC001
CFG(+),(-)
CAP VS
CAPSTAN PWM DRIVE
CAP ERROR
CAP PWM
CAP FG
ZOOM AD
16
IR ON, XSIRCS SIG SIRCS PWM
(4-58)
IC503
MODE CONTROL
OSD SO OSD SCK
(4-57)
IC502
INITIAL RESET BACKUP VCC
BACKUP VCC
X RESET
LI 3V
VTR UNREG
BT001 LITHIUM BATTERY
KEY AD2,3,4
DIAL A,B
DEW AD
XCC DOWN
BEEP
XS/S SW
XCAM+STBY SW XVTR MODE SW
XEJECT SW
KEY AD0,1
KEY AD5
CF-077 BOARD
(TR MODEL)
CONTROL SWITCH BLOCK (CF-1000)(2/2)
(TRV MODEL)
(4-38)
IC001
LCD INDICATOR DRIVE
LCD INDICATOR
S002-S011 FUNCTION SW
(TRV MODE)
PANEL OPEN/CLOSE SW
S006
SEL/PUSH EXEC DIAL
BZ001 BUZZER
(TR MODEL)
CONTROL SWITCH BLOCK(SS-1000)
(SEE PAGE 4-58)
START/STOP SW
POWER SW
CONTROL SWITCH BLOCK(FK-1000)
(SEE PAGE 4-58)
EJECT SW
VTR FUNCTION SW
ZOOM SW
PD-131 BOARD(2/2)
CONTROL SWITCH BLOCK (PR-10000)
S001 PANEL REVERSE SW
(SEE PAGE 4-19)
(TRV MODEL)
XSIRCS SIG
FAST CHARGE
DC PACK SW
BATT SIG
BATT/EXT
IR ON
CAM DD ON
VTR DD ON
CAM DD ON
BATT UNREG
F001
Q002
BATT(+)
DC PACK SW
BATT SIG
BATT(-)
BT901
BATTERY TERMINAL
VL UNREG
(VIDEO LIGHT MODEL)
(4-61)
IC001 (2/2)
F002
F003
VTR UNREG
BATT/EXT
ACV UNREG
ACV GND
DC IN
DC/DC CONVERTER
DRUM/ CAPSTAN PWM DRIVE
MT 4.75V
D 2.8V
A 2.8V
AU 2.8V
D 1.5V
CAM -7.0V
CAM 15V
AU 4.75V
A 4.75V
RP 4.75V
EVF BL/BW EVF 4.75V
EVF 2.8V
EVF 13.3V
(COLOR EVF MODEL)
F004
(TRV MODEL)
PANEL 2.8V
PANEL 4.75V
PANEL 13.3V
PANEL -15.3V
BL REG
TO PD-131 BOARD
(SEE PAGE 3-19)
(TRV MODEL)

3-3. CAMERA/VIDEO BLOCK DIAGRAM (1/2)

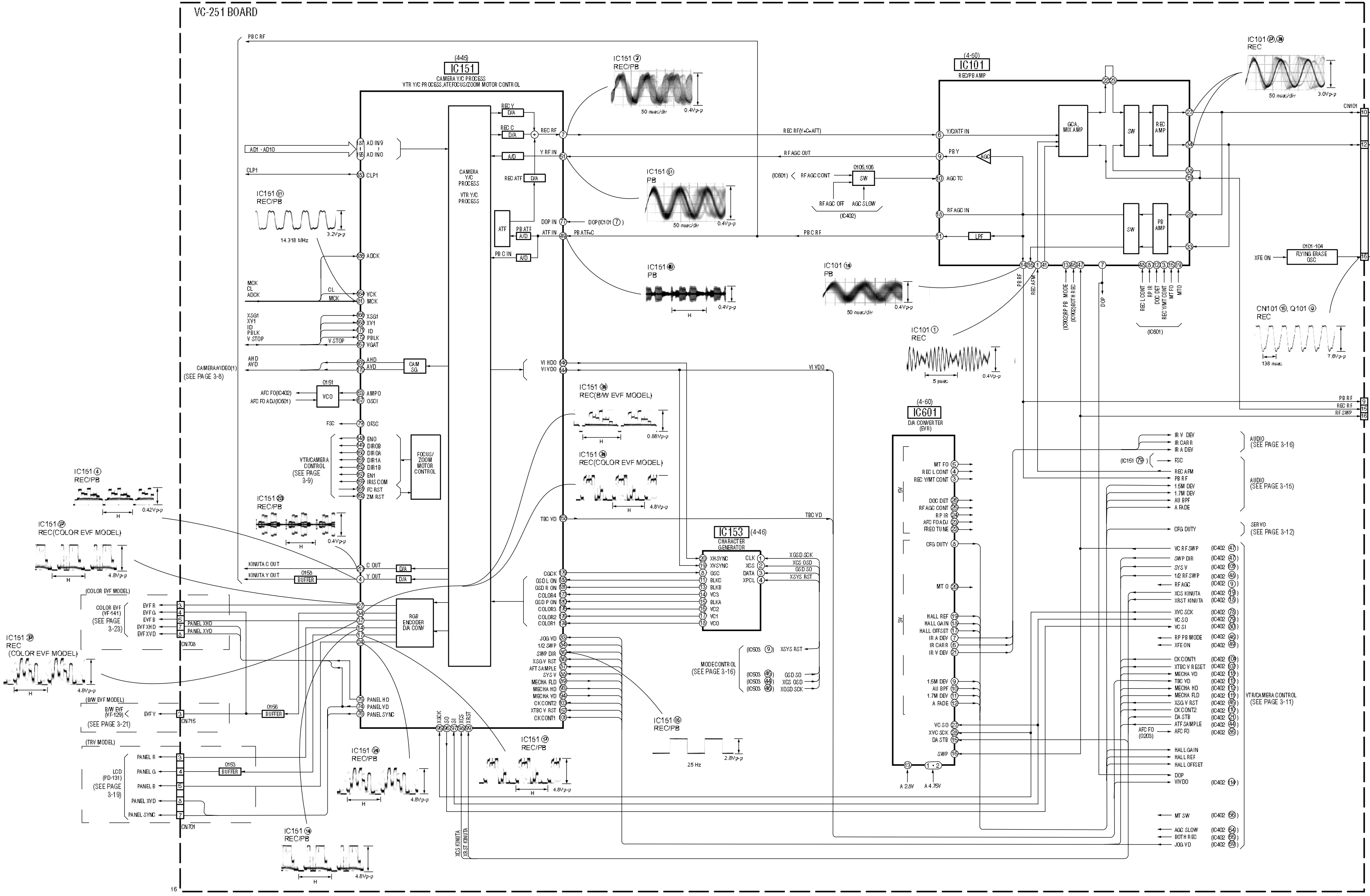
( ) : Page No. shown in ( ) indicates the page to refer on the schematic diagram.


VC-251 BOARD
(TR MODEL) CD-286 BOARD
(TRV MODEL) CD-281 BOARD
IC191 (4-8) CCD IMAGER
CCD OUT ⑦
V1 ④ V2 ③ V3 ② V4 ① RG ⑫
H2 ⑭ H1 ⑬ VL ⑪ SHT ⑩ VDD ⑧
Q191
CN191
CN271
CCD OUT
V1 V2 V3 V4 RG H2 H1 CAM-7.0V VSHT CAM 15V
IC191 ⑦ 0.6Vp-p H
IC191 ③,④ 6.8Vp-p H
IC191 ①,② 6.8Vp-p H
IC191 ⑫ 105 nsec 4.6Vp-p
IC191 ⑬,⑭ 105 nsec 6.8Vp-p
IC271 ㉑ REC 8.717 MHz 6.0Vp-p
IC271 ㉖ REC H 6.8Vp-p
IC271 ㉘ REC H 6.8Vp-p
IC271 ⑪ REC/PB 14.3181 MHz 3.6Vp-p
IC272 ㊱ PB H 0.3Vp-p
IC271 (4-43) TIMING GENERATOR
D 2.8V VDD1 ⑩ VDD6 ㊸ VDD2 ⑬
VSHT ㉝ V2 ㉕ V1 ㉖ V3 ㉘ V4 ㉛ VH ㉗ VL ㉙ VM ㉚
CAM-7.0V CAM 15V
(1/6 CCD MODEL) A 4.75V D 2.8V (1/4 CCD MODEL)
VDD3 ⑲ VDD4 ⑳
H2 ㉒ H1 ㉑ RG ⑱
CAM DD ON DSGAT ㊷
CLPDM ① XSHP ⑮ XSHD ⑯ PBLK ② XSG1 ㉞ ID ㊽ XV1 ㊶ VGAT ㊱ V STOP
SYSCK ⑪ VICK ⑫ CHCK ⑨ MCK CL ADCK
CK ⑦ OSC 0 ⑤ OSC 1 ④
X271 28.375MHz(PAL) 28.636363MHz(NTSC)
AHD ㊹ AVD ㊺ SSK ㊲ SSI ㊳ SEN ㊴ RST ㊵ SSO ㉟
XCS KINUTA XRST KINUTA CK CONT1 ㊼ CK CONT2 ㊻
XVC SCK VC SO VC SI
IC272 (4-43) S/H,AGC,A/D CONVERTER
PB C RF
PBLK ⑲ CLPDM ㉓ ㉚ CDS/PXGA CLP CAM LINE AGC A/D CONV. D-AGC D9 - D0 11 - 2 AD1-AD10
㉞ CLP LINE ㊱ CLP PB
CLPOB ⑳ CLP1
XSHP ㉑ XSHD ㉒ TIMING CIL XCH SCK ㊽ CH SO ㊼ XCS CH ㊻
ADCLK ⑯ ADCK AVDD 24•27•33•40 A 2.8V DVDD 17,18 A 2.8V DRVDD ⑬ 2.8V HDRST ㊸ SYS V ㊺
IC272 ㉚ REC H 1.2Vp-p
IC271 ⑤ REC/PB 28.63562 MHz 3.6Vp-p
IC272 ⑯ REC/PB 14.318 MHz 3.2Vp-p
XRST KINUTA SYS V
MCK CL ADCK
XSG1 XV1 ID PBLK V STOP
AHD AVD
CAMERA/VIDEO(2) (SEE PAGE 3-9)
KINUTA C OUT
KINUTA Y OUT
FP-257(FLEXIBLE)
J201 S VIDEO OUT Y C
S-Y I/O Y I/O 13
S-C I/O C I/O 15
XS JACK IN 16
VIDEO I/O 10
V JACK IN 7 CN
A/V OUT AUDIO I/O L
CN713 (FOR CHECK) 14 IR VIDEO
IC221 (4-52) VIDEO OUT
Y ⑱ V ㉒ C ⑭ DDS LPF YIN3 ㊹ YX DDS BPF CIN3 ⑤
V ㉔ IR VIDEO
XCS ⑪ XSCK ⑩ SI ⑨ XVC SCK VC SO XCS I/O
V VCC ㉓ A 4.75V Y VCC ⑯ A 4.75V C VCC ⑮ A 4.75V D VCC ⑧ D 2.8V
IC221 ⑱ REC/PB (S-Y OUT) H 2Vp-p
IC221 ㊹ REC/PB H R0.52Vp-p P0.48Vp-p
IC221 ㉒ REC/PB H R2.4Vp-p P2.1Vp-p
IC221 ⑭ REC/PB(S-C OUT) H 2Vp-p
IC221 ㉔ REC/PB IR ON H 0.52Vp-p
IC221 ⑤ REC/PB H R0.4Vp-p P0.5Vp-p
XCH SCK (IC402 (81)) CH SO (IC402 (82)) XCS CH (IC402 (83))
SYS V (IC402 (109)) XRST KINUTA (IC402 ⑱) XCS KINUTA (IC402 ⑲) CK CONT1 (IC402 (104)) CK CONT2 (IC402 (110)) XCS IO (IC402 ⑯)
XVC SCK (IC402 (78)) VC SO (IC402 (79)) VC SI (IC402 (80))
VTR/CAMERA CONTROL (SEE PAGE 3-11)
V JACK IN (IC503 (84)) XS JACK IN (IC503 (85)) CAM DD ON (IC503 ㉘)
MODE CONTROL (SEE PAGE 3-16)
IR VIDEO (CN703 ④) AUDIO (SEE PAGE 3-18)
16

TRV MODEL : CCD-TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/
TRV88/TRV98/TRV98E
TR MODEL : CCD-TR618/TR618E/TR718E/TR728E/TR818
1/6 CCD MODEL : CCD-TR618/TR618E/TR718E/TR728E/TRV49/TRV49E/TRV58/TRV58E
1/4 CCD MODEL : CCD-TR818/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E
NTSC MODEL : CCD-TR618/TR818/TRV49/TRV58/TRV68/TRV78/TRV88/TRV98
PAL MODEL : CCD-TR618E/TR718E/TR728E/TRV49E/TRV58E/TRV59E/TRV78E/TRV98E

3-4. CAMERA/VIDEO BLOCK DIAGRAM (2/2)

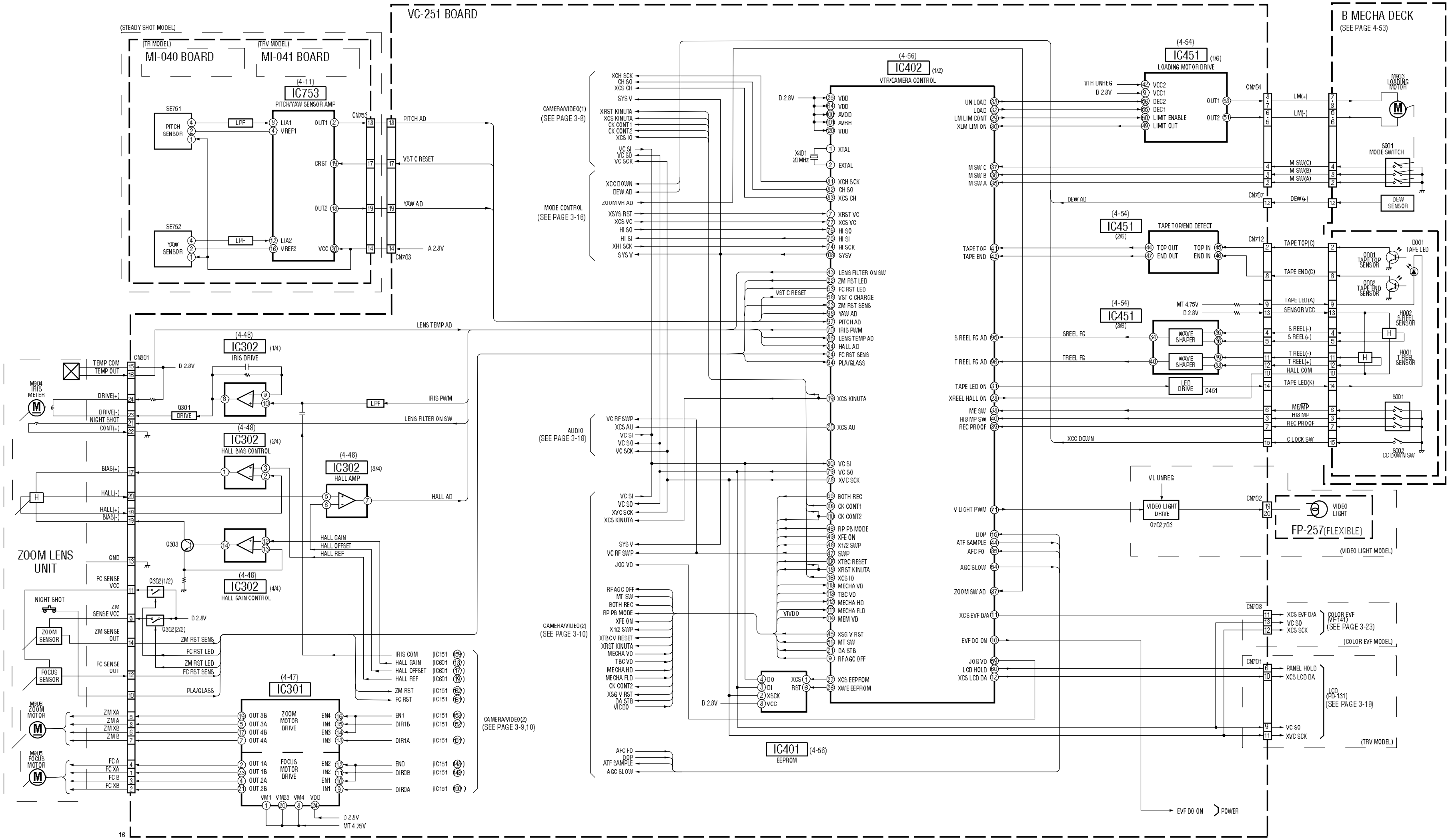
( ) : Page No. shown in ( ) indicates the page to refer on the schematic diagram.


VC-251 BOARD
IC151 (4-45)
CAMERA Y/C PROCESS
VTR Y/C PROCESS, ATF, FOCUS/ZOOM MOTOR CONTROL
CAMERA Y/C PROCESS
VTR Y/C PROCESS
IC101 (4-60)
REC/PB AMP
IC601 (4-60)
D/A CONVERTER (EVR)
IC153 (4-46)
CHARACTER GENERATOR
PB C RF
AD1 - AD10
AD IN9
AD IN0
CLP1
ADCK
MCK
CL
VCK
XSG1
XV1
ID
PBLK
V STOP
VGAT
AHD
AVD
CAM SG
CAMERA/VIDEO(1)
(SEE PAGE 3-8)
Q151
VCO
AFC FO(IC402)
AFC FO ADJ(IC601)
AMPO
OSCI
FSC
ORSC
VTR/CAMERA CONTROL
(SEE PAGE 3-9)
EN0
DIR0B
DIR0A
DIR1A
DIR1B
EN1
IRIS COM
FC RST
ZM RST
FOCUS/ZOOM MOTOR CONTROL
REC Y
REC C
D/A
A/D
REC RF
Y RF IN
REC ATF
ATF
PB ATF
DOP IN
DOP(IC101 ⑦)
ATF IN
PB ATF+C
PB C IN
VI HDO
VI VDO
TBC VD
KINUTA C OUT
KINUTA Y OUT
Q158
BUFFER
C OUT
Y OUT
RGB ENCODER D/A CONV
(COLOR EVF MODEL)
COLOR EVF (VF-141)
(SEE PAGE 3-23)
EVF R
EVF G
EVF B
EVF XHD
EVF XVD
PANEL XHD
PANEL XVD
CN708
(B/W EVF MODEL)
B/W EVF (VF-129)
(SEE PAGE 3-21)
EVF Y
Q156
BUFFER
CN715
(TRV MODEL)
LCD (PD-131)
(SEE PAGE 3-19)
PANEL R
PANEL G
PANEL B
PANEL XVD
PANEL SYNC
Q153
BUFFER
CN701
PANEL HD
PANEL VD
PANEL SYNC
CGCK
CGD L ON
CGD R ON
COLOR4
CGD P ON
COLOR3
COLOR2
COLOR1
JOG VD
1/2 SWP
SWP DIR
XSG V RST
AFT SAMPLE
SYS V
MECHA FLD
MECHA HD
MECHA VD
CK CONT2
XTBC V RST
CK CONT1
XCS KINUTA
XRST KINUTA
XH SYNC
XV SYNC
OSC
BLKC
BLKB
VC3
BLKA
VC2
VC1
VC0
CLK
XCS
DATA
XPCL
XCGD SCK
XCS CGD
CGD SO
XSYS RST
MODE CONTROL
(SEE PAGE 3-16)
(IC503)
CGD SO
XCS CGD
XCGD SCK
IC151 ⑦ REC/PB 50 nsec/div 0.4Vp-p
IC151 ⑧ PB 50 nsec/div 0.4Vp-p
IC151 ㊾ PB H 0.4Vp-p
IC151 REC/PB 14.318 MHz 3.2Vp-p
IC151 REC(B/W EVF MODEL) H 0.88Vp-p
IC151 REC(COLOR EVF MODEL) H 4.8Vp-p
IC151 REC/PB H 0.4Vp-p
IC151 ④ REC/PB H 0.42Vp-p
IC151 REC(COLOR EVF MODEL) H 4.8Vp-p
IC151 REC (COLOR EVF MODEL) H 4.8Vp-p
IC151 REC/PB H 4.8Vp-p
IC151 REC/PB H 4.8Vp-p
IC151 REC/PB H 4.8Vp-p
IC151 REC/PB 25 Hz 2.8Vp-p
IC101 REC 50 nsec/div 3.0Vp-p
IC101 PB 50 nsec/div 0.4Vp-p
IC101 ① REC 5 μsec 0.4Vp-p
CN101 ⑮, Q101 ⑥ REC 138 nsec 7.6Vp-p
REC RF(Y+C+AFT)
RF AGC OUT
(IC601)
RF AGC CONT
Q105,106
SW
RF AGC OFF
AGC SLOW
(IC402)
PB C RF
Y/C/ATF IN
PB Y
AGC
AGC TC
RF AGC IN
LPF
GCA, MIX AMP
SW
REC AMP
PB AMP
PB RF
REC AFM
(IC902)RP PB MODE
(IC902)BOTH REC
DOP
REC L CONT
RP IR
DOC DET
REC Y/MT CONT
MT FO
MTO
(IC601)
CN101
VIDEO HEAD
CH SP1
CH SP2
FLYING ERASE
XFE ON
Q101-104
FLYING ERASE OSC
CN713 (FOR CHECK)
PB RF
REC RF
RF SWP
VI VDO
TBC VD
MT FO
REC L CONT
REC Y/MT CONT
DOC DET
RF AGC CONT
RP IR
AFC FO ADJ
FREQ TUNE
CFG DUTY
MT O
HALL REF
HALL GAIN
HALL OFFSET
IR A DEV
IR CARR
IR V DEV
1.5M DEV
AU BPF
1.7M DEV
A FADE
VC SO
XYC SCK
DA STB
SWP
A 2.8V
A 4.75V
IR V DEV
IR CARR
IR A DEV
AUDIO (SEE PAGE 3-16)
(IC151 ⑦)
FSC
REC AFM
PB RF
1.5M DEV
1.7M DEV
AU BPF
A FADE
AUDIO (SEE PAGE 3-15)
CFG DUTY
SERVO (SEE PAGE 3-12)
VC RF SWP
SWP DIR
SYS V
1/2 RF SWP
RF AGC
XCS KINUTA
XRST KINUTA
XYC SCK
VC SO
VC SI
RP PB MODE
XFE ON
CK CONT1
XTBC V RESET
MECHA VD
TBC VD
MECHA HD
MECHA FLD
XSG V RST
CK CONT2
DA STB
ATF SAMPLE
AFC FO
AFC FO (Q203)
HALL GAIN
HALL REF
HALL OFFSET
DOP
VI VDO
MT SW
AGC SLOW
BOTH REC
JOG VD
(IC402)
VTR/CAMERA CONTROL (SEE PAGE 3-11)

TRV MODEL : CCD-TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/
TRV88/TRV98/TRV98E
B/W EVF MODEL : CCD-TR618/TR618E/TR718E/TR728E/TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E
COLOR EVF MODEL : CCD-TR818

3-5. VTR/CAMERA CONTROL BLOCK DIAGRAM

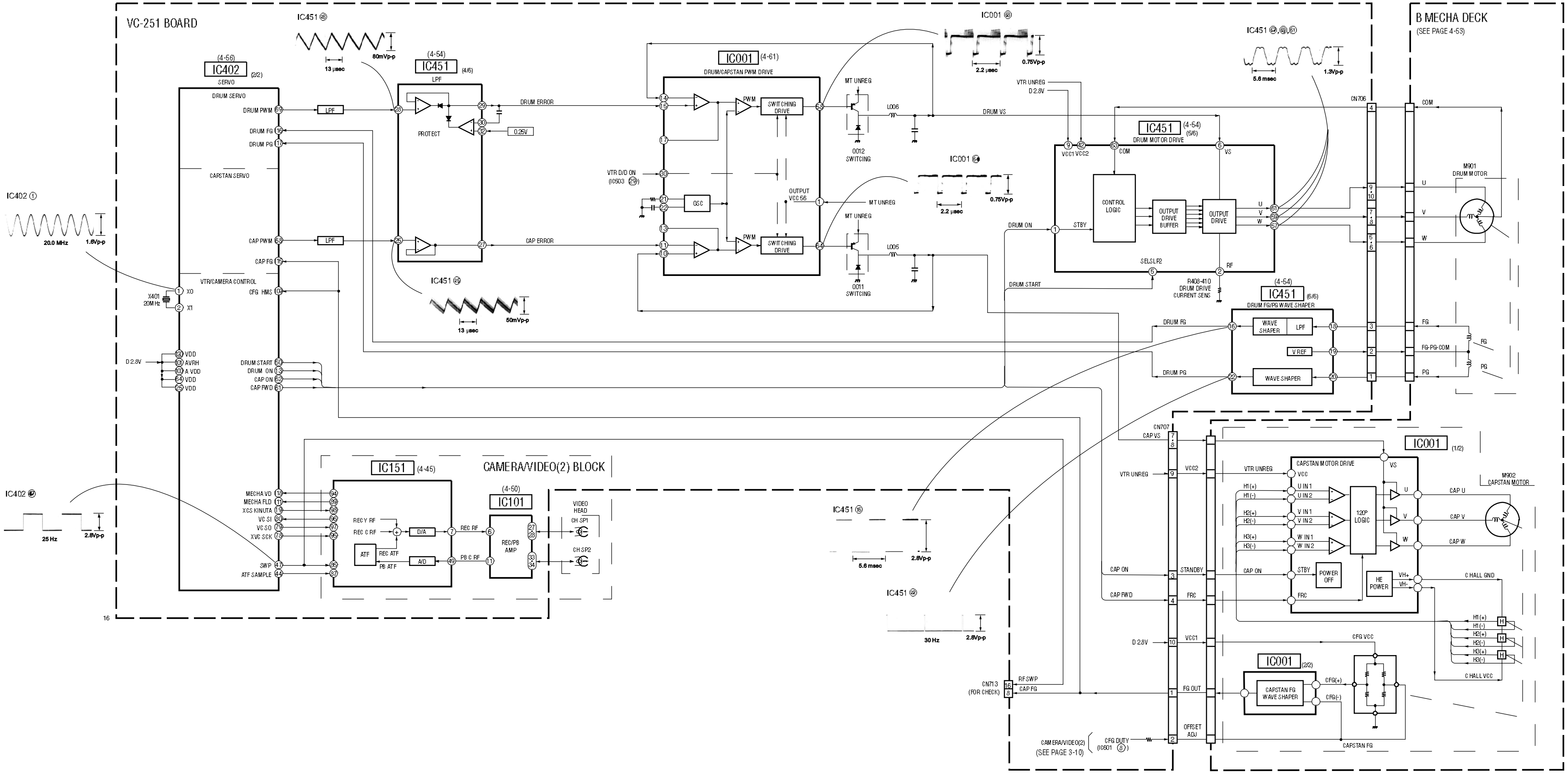
( ) : Page No. shown in ( ) indicates the page to refer on the schematic diagram.


VC-251 BOARD
B MECHA DECK
(SEE PAGE 4-53)
(STEADY SHOT MODEL)
(TR MODEL)
MI-040 BOARD
(TRV MODEL)
MI-041 BOARD
(4-11)
IC753
PITCH/YAW SENSOR AMP
SE751
PITCH SENSOR
SE752
YAW SENSOR
LPF
CN753
CN703
PITCH AD
VST C RESET
YAW AD
A 2.8V
(4-56)
IC402 (1/2)
VTR/CAMERA CONTROL
X401 20MHz
CAMERA/VIDEO(1) (SEE PAGE 3-8)
MODE CONTROL (SEE PAGE 3-16)
AUDIO (SEE PAGE 3-18)
CAMERA/VIDEO(2) (SEE PAGE 3-10)
CAMERA/VIDEO(2) (SEE PAGE 3-9,10)
(4-54)
IC451 (1/6)
LOADING MOTOR DRIVE
CN704
M903 LOADING MOTOR
S901 MODE SWITCH
DEW SENSOR
(4-54)
IC451 (2/6)
TAPE TOP/END DETECT
CN712
D001 TAPE LED
Q001 TAPE TOP SENSOR
Q002 TAPE END SENSOR
(4-54)
IC451 (3/6)
WAVE SHAPER
LED DRIVE
Q451
H002 S REEL SENSOR
H001 T REEL SENSOR
S001
S002 CC DOWN SW
CN707
VL UNREG
VIDEO LIGHT DRIVE
Q702,703
CN702
VIDEO LIGHT
FP-257(FLEXIBLE)
(VIDEO LIGHT MODEL)
CN708
COLOR EVF (VF-141) (SEE PAGE 3-23)
(COLOR EVF MODEL)
CN701
LCD (PD-131) (SEE PAGE 3-19)
(TRV MODEL)
EVF DD ON
POWER
IC401
EEPROM
(4-56)
CN301
(4-48)
IC302 (1/4)
IRIS DRIVE
Q301 DRIVE
(4-48)
IC302 (2/4)
HALL BIAS CONTROL
(4-48)
IC302 (3/4)
HALL AMP
(4-48)
IC302 (4/4)
HALL GAIN CONTROL
Q303
Q302(1/2)
Q302(2/2)
(4-47)
IC301
ZOOM MOTOR DRIVE
FOCUS MOTOR DRIVE
ZOOM LENS UNIT
M904 IRIS METER
NIGHT SHOT
ZOOM SENSOR
FOCUS SENSOR
M905 ZOOM MOTOR
M906 FOCUS MOTOR
LENS TEMP AD
IRIS PWM
LENS FILTER ON SW
HALL AD
D 2.8V
MT 4.75V
16

TRV MODEL : CCD-TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E
TR MODEL : CCD-TR618/TR618E/TR718E/TR728E/TR818
VIDEO LIGHT MODEL : CCD-TR618/TR618E/TR718E/TR728E/TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E
STEADY SHOT MODEL : CCD-TR818/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E
COLOR EVF MODEL : CCD-TR818

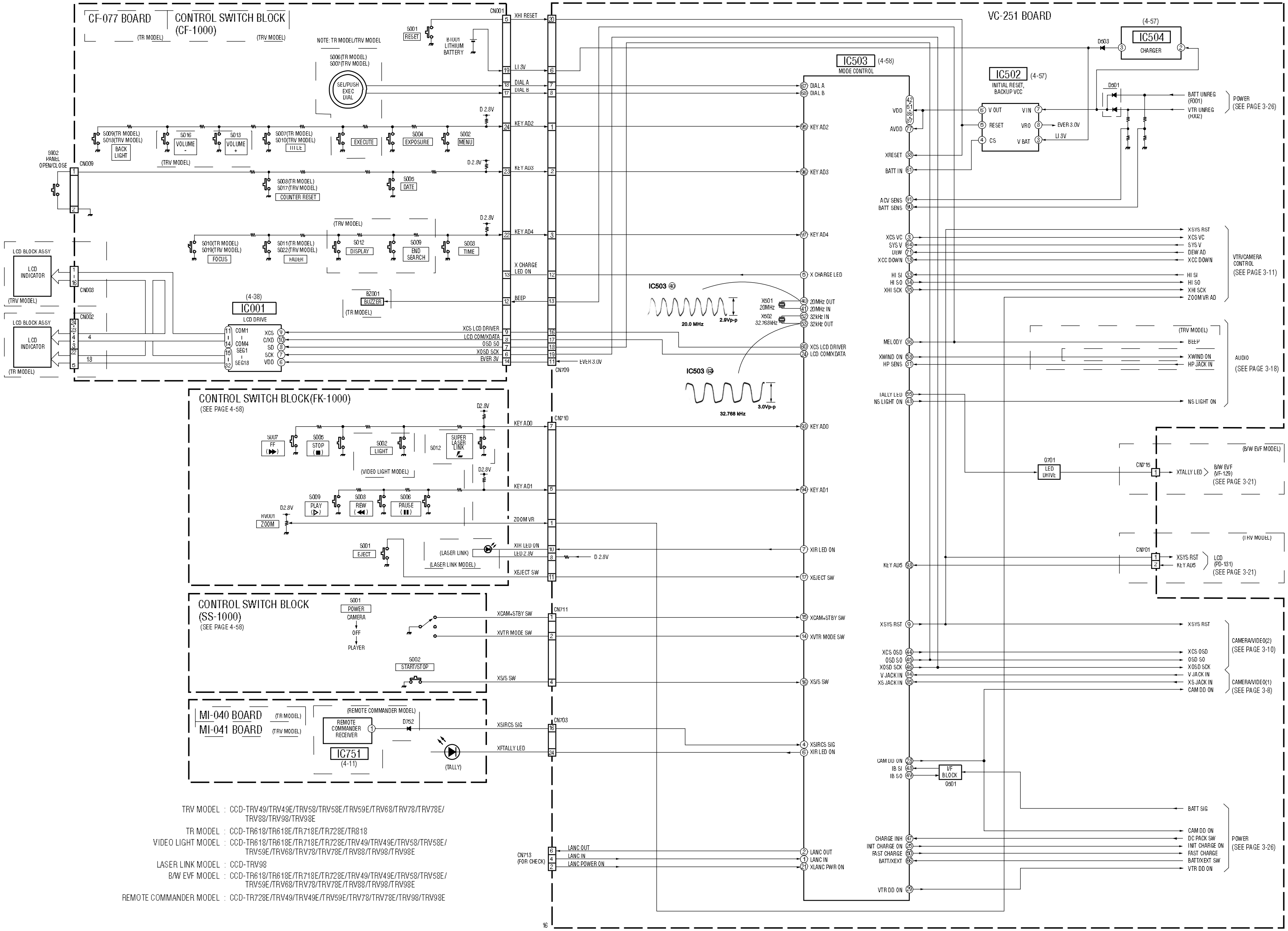
3-6. SERVO BLOCK DIAGRAM

( ) : Page No. shown in ( ) indicates the page to refer on the schematic diagram.


VC-251 BOARD
B MECHA DECK
(SEE PAGE 4-63)
IC402 (4-56) (2/2) SERVO
DRUM SERVO
DRUM PWM
DRUM FG
DRUM PG
CAPSTAN SERVO
CAP PWM
CAP FG
VTR/CAMERA CONTROL
CFG HMS
X401 20MHz
XO
X1
D 2.8V
VDD
AVRH
A VDD
VDD
VDD
DRUM START
DRUM ON
CAP ON
CAP FWD
MECHA VD
MECHA FLD
XCS KINUTA
VC SI
VC SO
XVC SCK
SWP
ATF SAMPLE
IC402 ①
20.0 MHz
1.6Vp-p
IC402 ㊼
25 Hz
2.8Vp-p
IC451 ㉖
13 μsec
80mVp-p
IC451 (4-54) (4/6) LPF
PROTECT
0.25V
LPF
DRUM ERROR
CAP ERROR
IC451 ㉕
13 μsec
50mVp-p
IC001 (4-61)
DRUM/CAPSTAN PWM DRIVE
PWM
SWITCHING DRIVE
OSC
OUTPUT VCC 56
VTR D/D ON
(IC503 ㉙)
MT UNREG
L006
L005
Q012 SWITCHING
Q011 SWITCHING
IC001 ㊽
2.2 μsec
0.75Vp-p
IC001 ㊿
2.2 μsec
0.75Vp-p
VTR UNREG
D 2.8V
DRUM VS
IC451 (4-54) (5/6)
DRUM MOTOR DRIVE
VCC1 VCC2
COM
VS
CONTROL LOGIC
OUTPUT DRIVE BUFFER
OUTPUT DRIVE
STBY
DRUM ON
SELSLR2
RF
R408-410 DRUM DRIVE CURRENT SENS
DRUM START
IC451 ㊼,㊽,㊾
5.6 msec
1.3Vp-p
CN706
COM
U
V
W
M901 DRUM MOTOR
IC451 (4-54) (6/6)
DRUM FG/PG WAVE SHAPER
WAVE SHAPER
LPF
V REF
WAVE SHAPER
DRUM FG
DRUM PG
FG
FG-PG-COM
PG
IC151 (4-45)
CAMERA/VIDEO(2) BLOCK
REC Y RF
REC C RF
D/A
A/D
ATF
REC ATF
PB ATF
REC RF
PB C RF
IC101 (4-50)
REC/PB AMP
VIDEO HEAD
CH SP1
CH SP2
IC451 ⑯
5.6 msec
2.8Vp-p
IC451 ㉒
30 Hz
2.8Vp-p
CN707
CAP VS
VTR UNREG
CAP ON
CAP FWD
D 2.8V
VCC2
STANDBY
FRC
VCC1
FG OUT
OFFSET ADJ
CN713 (FOR CHECK)
RF SWP
CAP FG
CAMERA/VIDEO(2) (SEE PAGE 3-10)
CFG DUTY (IC601 ⑧)
IC001 (1/2)
CAPSTAN MOTOR DRIVE
VCC
VS
U IN 1
U IN 2
V IN 1
V IN 2
W IN 1
W IN 2
120° LOGIC
STBY
POWER OFF
HE POWER
VH+
VH-
FRC
H1(+)
H1(-)
H2(+)
H2(-)
H3(+)
H3(-)
CAP U
CAP V
CAP W
M902 CAPSTAN MOTOR
C HALL GND
C HALL VCC
IC001 (2/2)
CAPSTAN FG WAVE SHAPER
CFG(+)
CFG(-)
CFG VCC
CAPSTAN FG
16

3-7. MODE CONTROL BLOCK DIAGRAM

( ) : Page No. shown in ( ) indicates the page to refer on the schematic diagram.


CF-077 BOARD
(TR MODEL)
CONTROL SWITCH BLOCK (CF-1000)
(TRV MODEL)
NOTE: TR MODEL/TRV MODEL
S001 RESET
B1001 LITHIUM BATTERY
S006(TR MODEL) S007(TRV MODEL)
SEL/PUSH EXEC DIAL
S009(TR MODEL) S018(TRV MODEL) BACK LIGHT
S016 VOLUME -
S013 VOLUME +
S007(TR MODEL) S010(TRV MODEL) TITLE
EXECUTE
S004 EXPOSURE
S002 MENU
S902 PANEL OPEN/CLOSE
CN009
S008(TR MODEL) S017(TRV MODEL) COUNTER RESET
S005 DATE
S010(TR MODEL) S019(TRV MODEL) FOCUS
S011(TR MODEL) S022(TRV MODEL) FADER
S012 DISPLAY
S009 END SEARCH
S003 TIME
BZ001 BUZZER
LCD BLOCK ASSY
LCD INDICATOR
CN003
CN002
IC001 (4-38) LCD DRIVE
COM1 COM4 SEG1 SEG18 XCS CXD SD SCK VDD
CN001
XHI RESET
LI 3V
DIAL A
DIAL B
D 2.8V
KEY AD2
KEY AD3
KEY AD4
X CHARGE LED ON
BEEP
XCS LCD DRIVER
LCD COM/XDATA
OSD SO
XOSD SCK
EVER 3V
CN709
EVER 3.0V
CONTROL SWITCH BLOCK(FK-1000) (SEE PAGE 4-58)
S007 FF
S005 STOP
S002 LIGHT
S012 SUPER LASER LINK
(VIDEO LIGHT MODEL)
S009 PLAY
S008 REW
S006 PAUSE
RV001 ZOOM
S001 EJECT
(LASER LINK)
(LASER LINK MODEL)
KEY AD0
KEY AD1
ZOOM VR
XIR LED ON
LED 2.8V
XEJECT SW
CN710
CONTROL SWITCH BLOCK (SS-1000) (SEE PAGE 4-58)
S001 POWER CAMERA OFF PLAYER
S002 START/STOP
XCAM+STBY SW
XVTR MODE SW
XS/S SW
CN711
MI-040 BOARD (TR MODEL)
MI-041 BOARD (TRV MODEL)
(REMOTE COMMANDER MODEL)
REMOTE COMMANDER RECEIVER
IC751 (4-11)
D752
(TALLY)
XSIRCS SIG
XFTALLY LED
CN703
CN713 (FOR CHECK)
LANC OUT
LANC IN
LANC POWER ON
VC-251 BOARD
IC504 (4-57) CHARGER
D503
IC503 (4-58) MODE CONTROL
IC502 (4-57) INITIAL RESET, BACKUP VCC
V OUT VIN RESET VRO CS V BAT
EVER 3.0V
LI 3V
D501
BATT UNREG (F001)
VTR UNREG (F002)
POWER (SEE PAGE 3-26)
VDD
AVDD
XRESET
BATT IN
ACV SENS
BATT SENS
XCS VC
SYS V
DEW
XCC DOWN
HI SI
HI SO
XHI SCK
XSYS RST
DEW AD
ZOOM VR AD
VTR/CAMERA CONTROL (SEE PAGE 3-11)
IC503 ㊵
20.0 MHz
2.9Vp-p
X501 20MHz
X502 32.768kHz
20MHz OUT
20MHz IN
32kHz IN
32kHz OUT
IC503 ㊳
32.768 kHz
3.0Vp-p
XCS LCD DRIVER
LCD COM/XDATA
MELODY
XWIND ON
HP SENS
TALLY LED
NS LIGHT ON
(TRV MODEL)
BEEP
HP JACK IN
AUDIO (SEE PAGE 3-18)
(B/W EVF MODEL)
Q701 LED DRIVE
CN715
XTALLY LED
B/W EVF (VF-129) (SEE PAGE 3-21)
(TRV MODEL)
CN701
KEY AD5
LCD (PD-131) (SEE PAGE 3-21)
XCAM+STBY SW
XVTR MODE SW
XS/S SW
XSYS RST
XCS OSD
OSD SO
XOSD SCK
V JACK IN
XS JACK IN
CAM DD ON
CAMERA/VIDEO(2) (SEE PAGE 3-10)
CAMERA/VIDEO(1) (SEE PAGE 3-8)
XSIRCS SIG
XIR LED ON
IB SI
IB SO
I/F BLOCK
Q501
BATT SIG
CHARGE INH
INIT CHARGE ON
FAST CHARGE
BATT/XEXT
DC PACK SW
BATT/XEXT SW
VTR DD ON
POWER (SEE PAGE 3-26)
XLANC PWR ON
16

TRV MODEL : CCD-TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/
TRV88/TRV98/TRV98E

TR MODEL : CCD-TR618/TR618E/TR718E/TR728E/TR818

VIDEO LIGHT MODEL : CCD-TR618/TR618E/TR718E/TR728E/TRV49/TRV49E/TRV58/TRV58E/
TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E

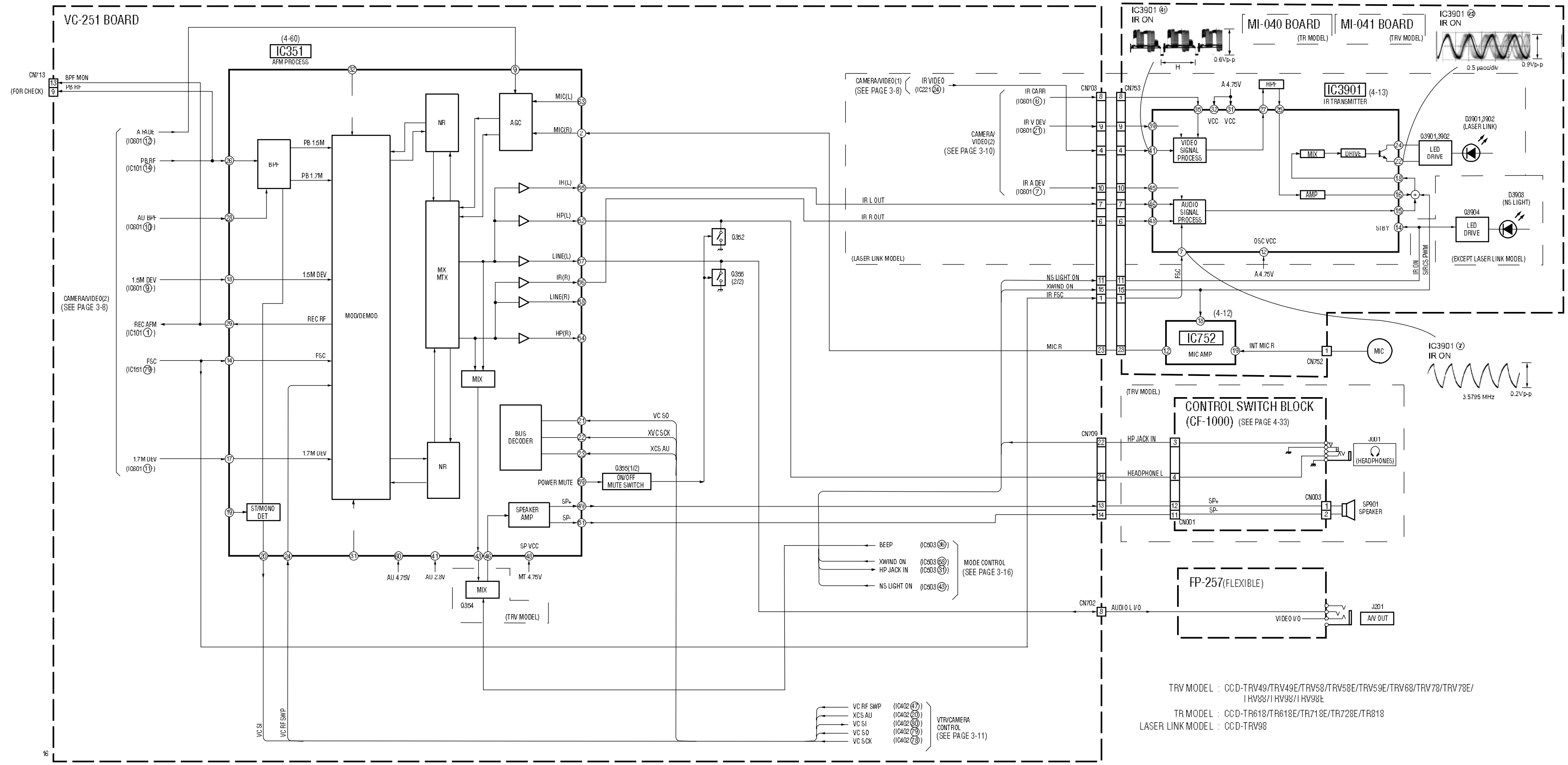
LASER LINK MODEL : CCD-TRV98

B/W EVF MODEL : CCD-TR618/TR618E/TR718E/TR728E/TRV49/TRV49E/TRV58/TRV58E/
TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E

REMOTE COMMANDER MODEL : CCD-TR728E/TRV49/TRV49E/TRV59E/TRV78/TRV78E/TRV98/TRV98E

3-8. AUDIO BLOCK DIAGRAM

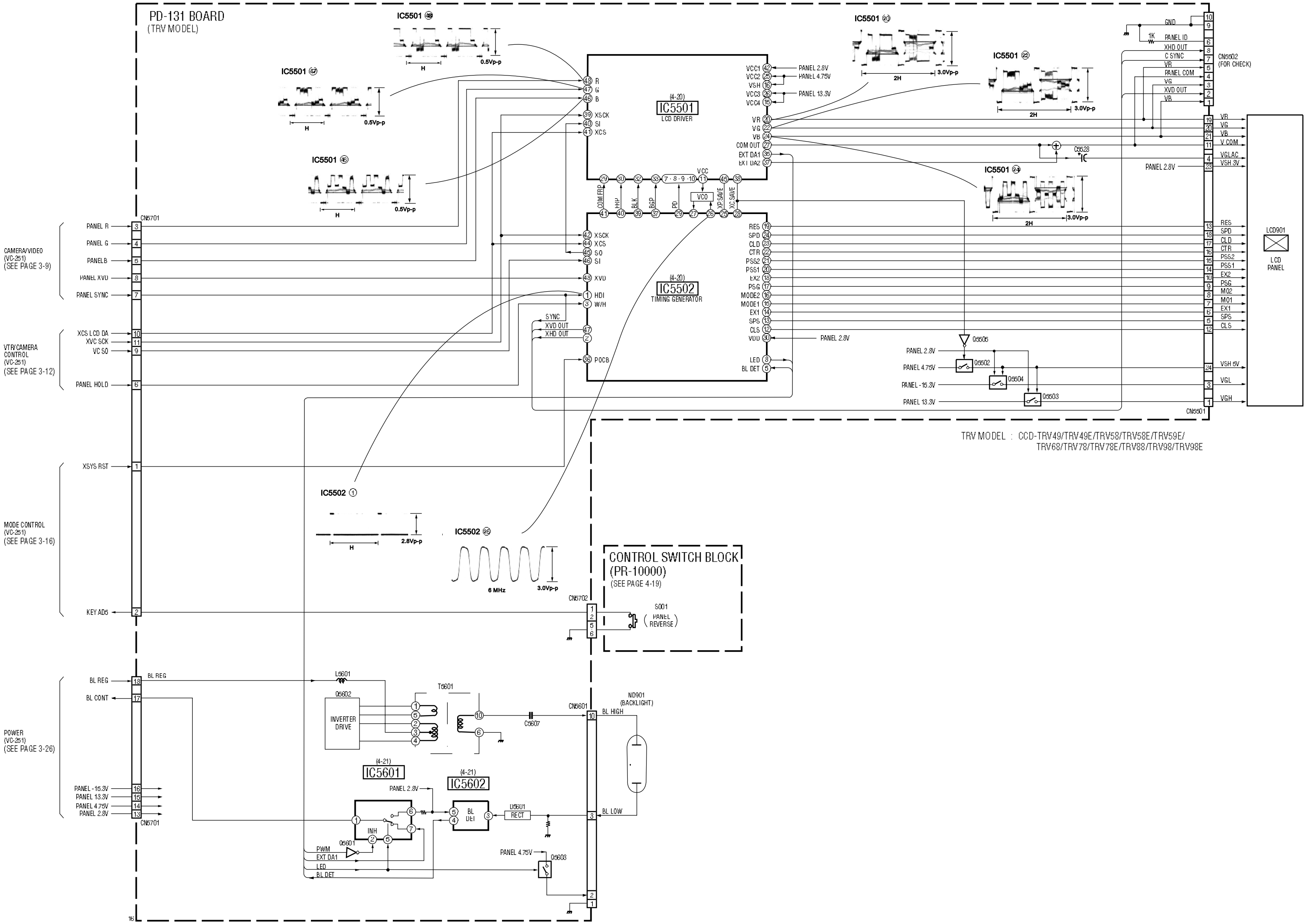
( ) : Page No. shown in ( ) indicates the page to refer on the schematic diagram.


VC-251 BOARD
CN713
(FOR CHECK)
13
9
BPF MON
PB RF
(4-60)
IC351
AFM PROCESS
A FADE (IC601 ⑫)
PB RF (IC101 ⑭)
AU BPF (IC601 ⑩)
1.5M DEV (IC601 ⑨)
CAMERA/VIDEO(2) (SEE PAGE 3-8)
REC AFM (IC101 ①)
FSC (IC151 (79))
1.7M DEV (IC601 ⑪)
BPF
PB 1.5M
PB 1.7M
1.5M DEV
REC RF
FSC
1.7M DEV
MOD/DEMOD
NR
AGC
MX MTX
NR
MIX
MIC(L)
MIC(R)
IR(L)
HP(L)
LINE(L)
IR(R)
LINE(R)
HP(R)
BUS DECODER
POWER MUTE
Q355(1/2)
ON/OFF MUTE SWITCH
SPEAKER AMP
SP+
SP-
SP VCC
ST/MONO DET
AU 4.75V
AU 2.8V
MT 4.75V
MIX
Q354
(TRV MODEL)
Q352
Q355 (2/2)
VC SO
XVC SCK
XCS AU
VC SI
VC RF SWP
BEEP (IC503 ㊱)
XWIND ON (IC503 (58))
HP JACK IN (IC503 ㉛)
NS LIGHT ON (IC503 ㊸)
MODE CONTROL (SEE PAGE 3-16)
VC RF SWP (IC402 ㊼)
XCS AU (IC402 ⑳)
VC SI (IC402 (80))
VC SO (IC402 (79))
VC SCK (IC402 (78))
VTR/CAMERA CONTROL (SEE PAGE 3-11)
16
CAMERA/VIDEO(1) (SEE PAGE 3-8)
IR VIDEO (IC221 ㉔)
IR CARR (IC601 ⑥)
IR V DEV (IC601 ㉑)
CAMERA/VIDEO(2) (SEE PAGE 3-10)
IR A DEV (IC601 ⑦)
IR L OUT
IR R OUT
(LASER LINK MODEL)
NS LIGHT ON
XWIND ON
IR FSC
MIC R
CN703
CN753
IC3901 ㊶
IR ON
0.6Vp-p
H
MI-040 BOARD (TR MODEL)
MI-041 BOARD (TRV MODEL)
IC3901 ㉒
IR ON
0.5 μsec/div
0.9Vp-p
A 4.75V
HPF
IC3901 (4-13)
IR TRANSMITTER
VCC
VCC
VIDEO SIGNAL PROCESS
AUDIO SIGNAL PROCESS
MIX
DRIVE
AMP
Q3901,3902
LED DRIVE
D3901,3902 (LASER LINK)
STBY
Q3904
LED DRIVE
D3903 (NS LIGHT)
OSC VCC
A 4.75V
FSC
IR ON
SIRCS PWM
(EXCEPT LASER LINK MODEL)
(4-12)
IC752
MIC AMP
INT MIC R
CN752
MIC
IC3901 ⑦
IR ON
3.5795 MHz
0.2Vp-p
(TRV MODEL)
CONTROL SWITCH BLOCK (CF-1000) (SEE PAGE 4-33)
CN709
HP JACK IN
HEADPHONE L
SP+
SP-
CN001
CN003
J001
(HEADPHONES)
SP901
SPEAKER
FP-257(FLEXIBLE)
CN702
AUDIO L I/O
VIDEO I/O
J201
A/V OUT

TRV MODEL : CCD-TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/
TRV88/TRV98/TRV98E
TR MODEL : CCD-TR618/TR618E/TR718E/TR728E/TR818
LASER LINK MODEL : CCD-TRV98

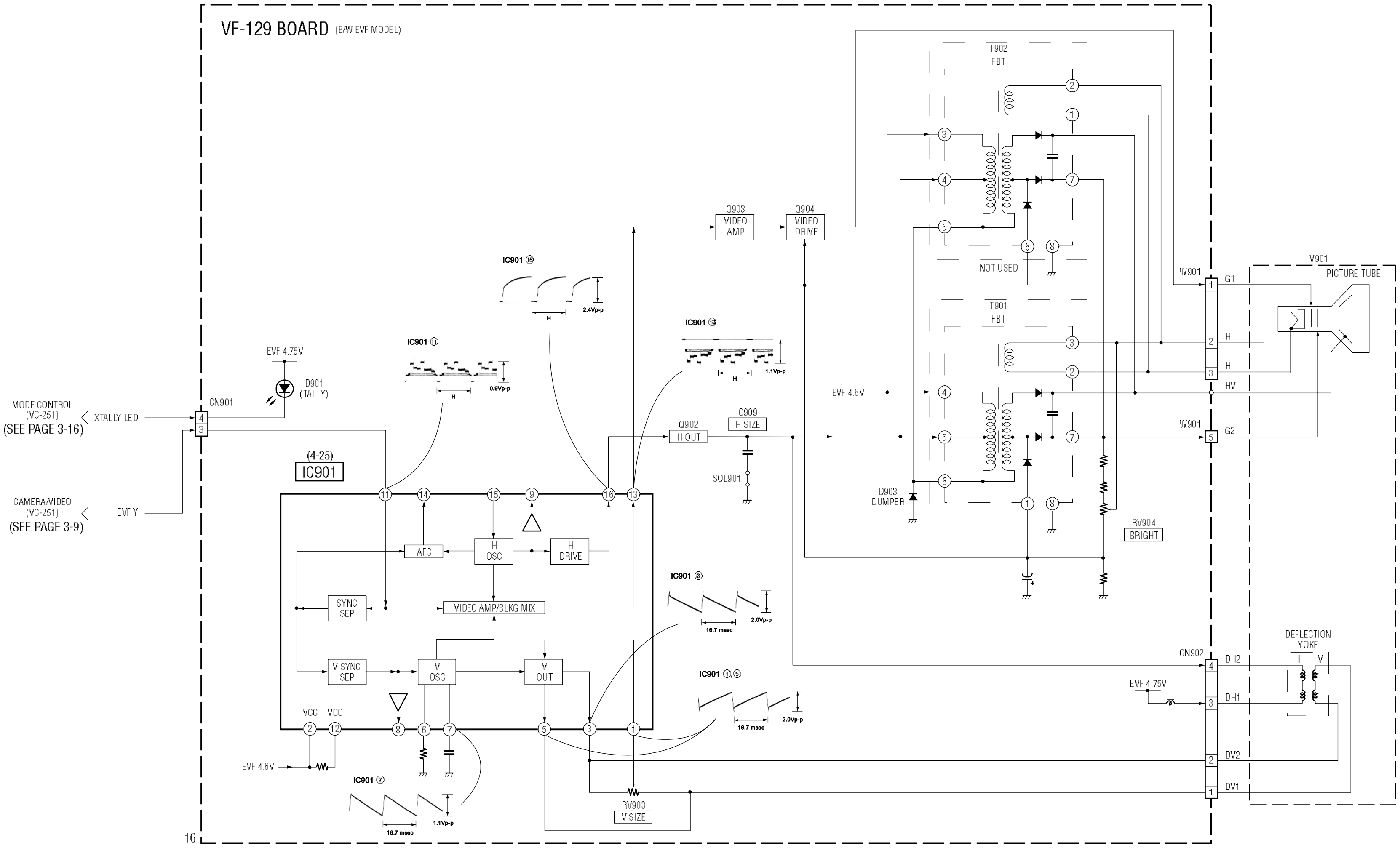
3-9. LCD BLOCK DIAGRAM

( ) : Page No. shown in ( ) indicates the page to refer on the schematic diagram.


PD-131 BOARD
(TRV MODEL)
IC5501 ㊽
0.5Vp-p
H
IC5501 ㊼
0.5Vp-p
H
IC5501 ㊻
0.5Vp-p
H
IC5501 ⑳
2H
3.0Vp-p
IC5501 ㉒
2H
3.0Vp-p
IC5501 ㉔
2H
3.0Vp-p
(4-20)
IC5501
LCD DRIVER
R
G
B
XSCK
SI
XCS
VCC1
VCC2
VSH
VCC3
VCC4
PANEL 2.8V
PANEL 4.75V
PANEL 13.3V
VR
VG
VB
COM OUT
EXT DA1
EXT DA2
VCC
VCO
COM FRP
FRP
BLK
BGP
PD
XP SAVE
XC SAVE
(4-20)
IC5502
TIMING GENERATOR
XSCK
XCS
SO
SI
XVD
HDI
W/H
SYNC
XVD OUT
XHD OUT
POCB
RES
SPD
CLD
CTR
PSS2
PSS1
EX2
PSG
MODE2
MODE1
EX1
SPS
CLS
VDD
LED
BL DET
PANEL 2.8V
CN5701
CAMERA/VIDEO
(VC-251)
(SEE PAGE 3-9)
PANEL R
PANEL G
PANELB
PANEL XVD
PANEL SYNC
VTR/CAMERA
CONTROL
(VC-251)
(SEE PAGE 3-12)
XCS LCD DA
XVC SCK
VC SO
PANEL HOLD
XSYS RST
MODE CONTROL
(VC-251)
(SEE PAGE 3-16)
KEY AD5
GND
1K
PANEL ID
XHD OUT
C SYNC
VR
PANEL COM
VG
XVD OUT
VB
CN5502
(FOR CHECK)
Q5528
PANEL 2.8V
VR
VG
VB
V COM
VGLAC
VSH 3V
RES
SPD
CLD
CTR
PSS2
PSS1
EX2
PSG
MO2
MO1
EX1
SPS
CLS
VSH 5V
VGL
VGH
LCD901
LCD
PANEL
CN5501
Q5505
PANEL 2.8V
Q5502
PANEL 4.75V
Q5504
PANEL -15.3V
Q5503
PANEL 13.3V
TRV MODEL : CCD-TRV49/TRV49E/TRV58/TRV58E/TRV59E/
TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E
IC5502 ①
H
2.8Vp-p
IC5502 ㉖
6 MHz
3.0Vp-p
CONTROL SWITCH BLOCK
(PR-10000)
(SEE PAGE 4-19)
CN5702
S001
(PANEL REVERSE)
POWER
(VC-251)
(SEE PAGE 3-26)
BL REG
BL CONT
BL REG
PANEL -15.3V
PANEL 13.3V
PANEL 4.75V
PANEL 2.8V
CN5701
L5601
Q5602
INVERTER
DRIVE
T5601
C5607
CN5601
ND901
(BACKLIGHT)
BL HIGH
BL LOW
(4-21)
IC5601
INH
(4-21)
IC5602
BL
DET
D5601
RECT
PANEL 2.8V
Q5601
PWM
EXT DA1
LED
BL DET
PANEL 4.75V
Q5603
16

3-10. B/W EVF BLOCK DIAGRAM

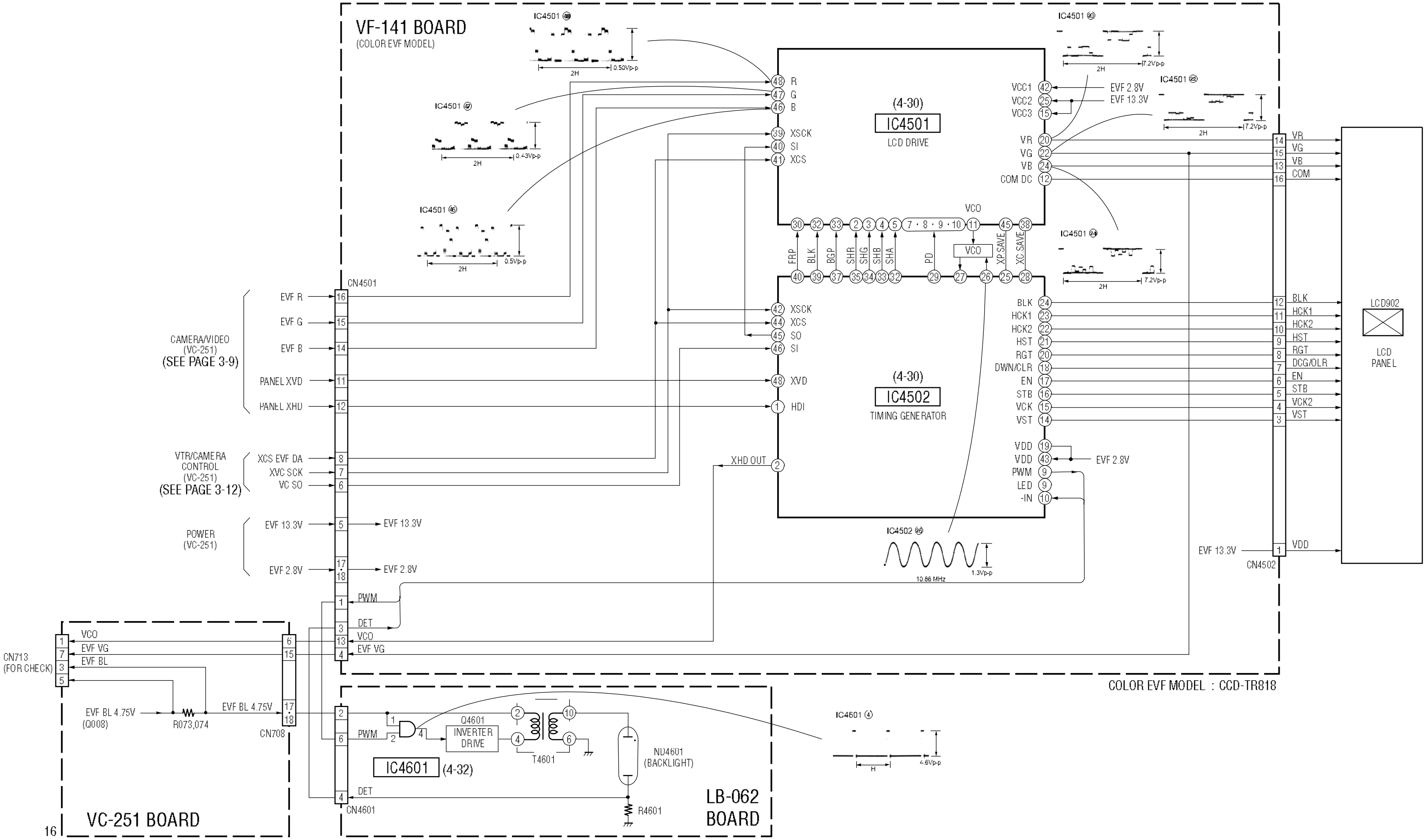
( ) : Page No. shown in ( ) indicates the page to refer on the schematic diagram.


VF-129 BOARD (B/W EVF MODEL)
MODE CONTROL (VC-251)
(SEE PAGE 3-16)
XTALLY LED
CAMERA/VIDEO (VC-251)
(SEE PAGE 3-9)
EVF Y
CN901
4
3
EVF 4.75V
D901 (TALLY)
(4-25)
IC901
11
14
15
9
16
13
AFC
H OSC
H DRIVE
SYNC SEP
VIDEO AMP/BLKG MIX
V SYNC SEP
V OSC
V OUT
VCC
VCC
2
12
8
6
7
5
3
1
EVF 4.6V
IC901 ⑦
16.7 msec
1.1Vp-p
IC901 ⑪
H
0.9Vp-p
IC901 ⑯
H
2.4Vp-p
IC901 ⑬
H
1.1Vp-p
IC901 ③
16.7 msec
2.0Vp-p
IC901 ①,⑤
16.7 msec
2.0Vp-p
Q903
VIDEO AMP
Q904
VIDEO DRIVE
Q902
H OUT
C909
H SIZE
SOL901
RV903
V SIZE
T902
FBT
1
2
3
4
5
6
7
8
NOT USED
T901
FBT
EVF 4.6V
D903
DUMPER
RV904
BRIGHT
W901
G1
H
H
HV
W901
G2
V901
PICTURE TUBE
CN902
EVF 4.75V
DH2
DH1
DV2
DV1
DEFLECTION YOKE
H
V
16

B/W EVF MODEL : CCD-TR618/TR618E/TR718E/TR728E/TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E

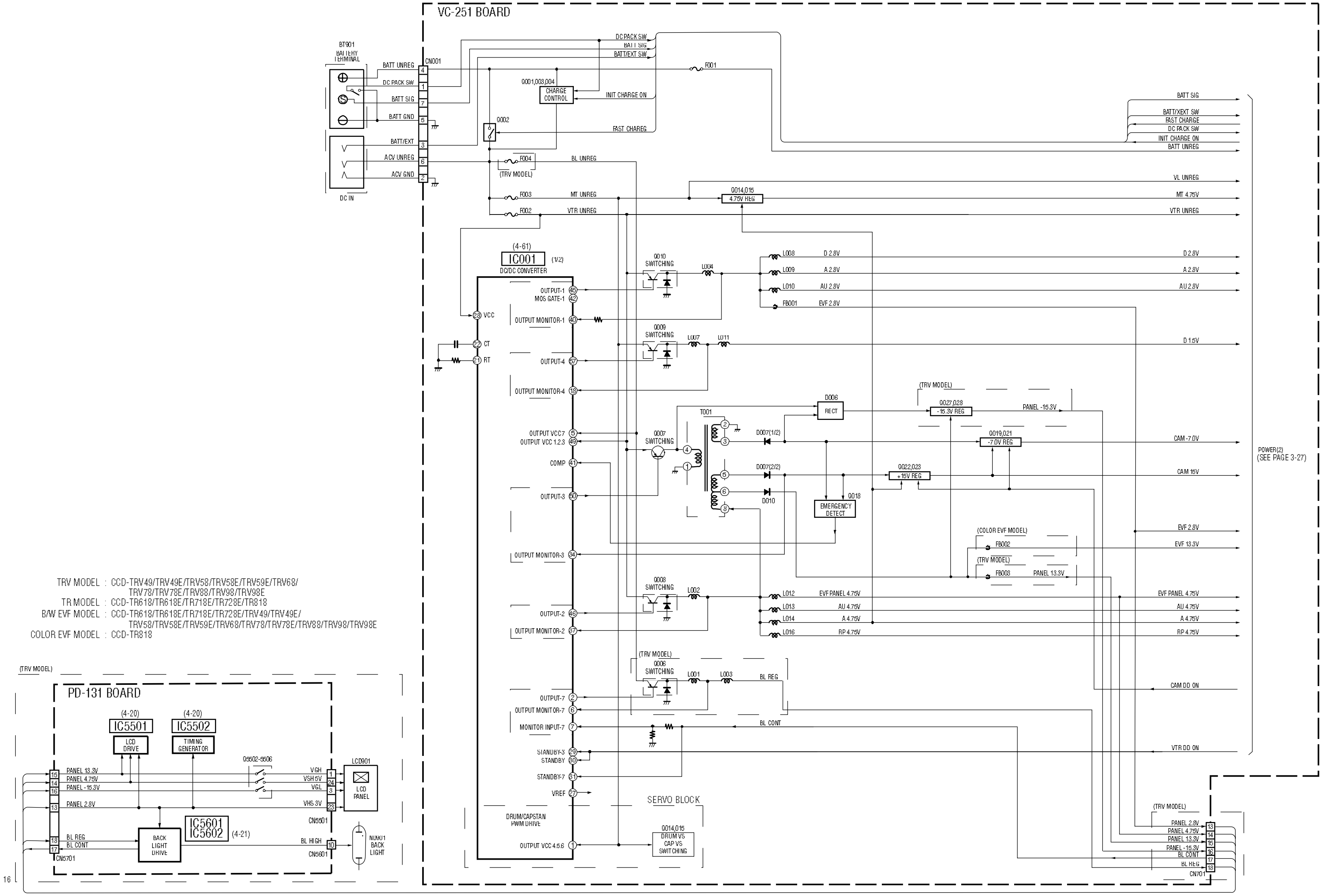
3-11.COLOR EVF BLOCK DIAGRAM

( ) : Page No. shown in ( ) indicates the page to refer on the schematic diagram.


VF-141 BOARD
(COLOR EVF MODEL)
IC4501 ㊽
2H
0.50Vp-p
IC4501 ㊼
2H
0.43Vp-p
IC4501 ㊻
2H
0.5Vp-p
IC4501 ⑳
2H
7.2Vp-p
IC4501 ㉒
2H
7.2Vp-p
IC4501 ㉔
2H
7.2Vp-p
(4-30)
IC4501
LCD DRIVE
48 R
47 G
46 B
39 XSCK
40 SI
41 XCS
VCC1 42
VCC2 25
VCC3 15
EVF 2.8V
EVF 13.3V
VR 20
VG 22
VB 24
COM DC 12
VCO
30 32 33 2 3 4 5 7・8・9・10 11 45 38
FRP
BLK
BGP
SHR
SHG
SHB
SHA
PD
VCO
XP SAVE
XC SAVE
40 39 37 35 34 33 32 29 27 26 25 28
42 XSCK
44 XCS
45 SO
46 SI
48 XVD
1 HDI
XHD OUT 2
(4-30)
IC4502
TIMING GENERATOR
BLK 24
HCK1 23
HCK2 22
HST 21
RGT 20
DWN/CLR 18
EN 17
STB 16
VCK 15
VST 14
VDD 19
VDD 43
PWM 9
LED 8
-IN 10
EVF 2.8V
IC4502 ㉖
10.86 MHz
1.3Vp-p
CN4501
CAMERA/VIDEO
(VC-251)
(SEE PAGE 3-9)
EVF R 16
EVF G 15
EVF B 14
PANEL XVD 11
PANEL XHD 12
VTR/CAMERA
CONTROL
(VC-251)
(SEE PAGE 3-12)
XCS EVF DA 8
XVC SCK 7
VC SO 6
POWER
(VC-251)
EVF 13.3V 5
EVF 13.3V
EVF 2.8V 17 18
EVF 2.8V
1 PWM
3 DET
13 VCO
4 EVF VG
14 VR
15 VG
13 VB
16 COM
12 BLK
11 HCK1
10 HCK2
9 HST
8 RGT
7 DCG/OLR
6 EN
5 STB
4 VCK2
3 VST
EVF 13.3V
1 VDD
CN4502
LCD902
LCD PANEL
COLOR EVF MODEL : CCD-TR818
CN713
(FOR CHECK)
1 VCO
7 EVF VG
3 EVF BL
5
6
15
EVF BL 4.75V
(Q008)
R073,074
EVF BL 4.75V
17
18
CN708
16
VC-251 BOARD
2
6 PWM
4 DET
CN4601
1
2
4
Q4601
INVERTER DRIVE
2
4
10
6
T4601
IC4601
(4-32)
NU4601
(BACKLIGHT)
R4601
LB-062
BOARD
IC4601 ④
H
4.6Vp-p

3-12. POWER BLOCK DIAGRAM (1/2)

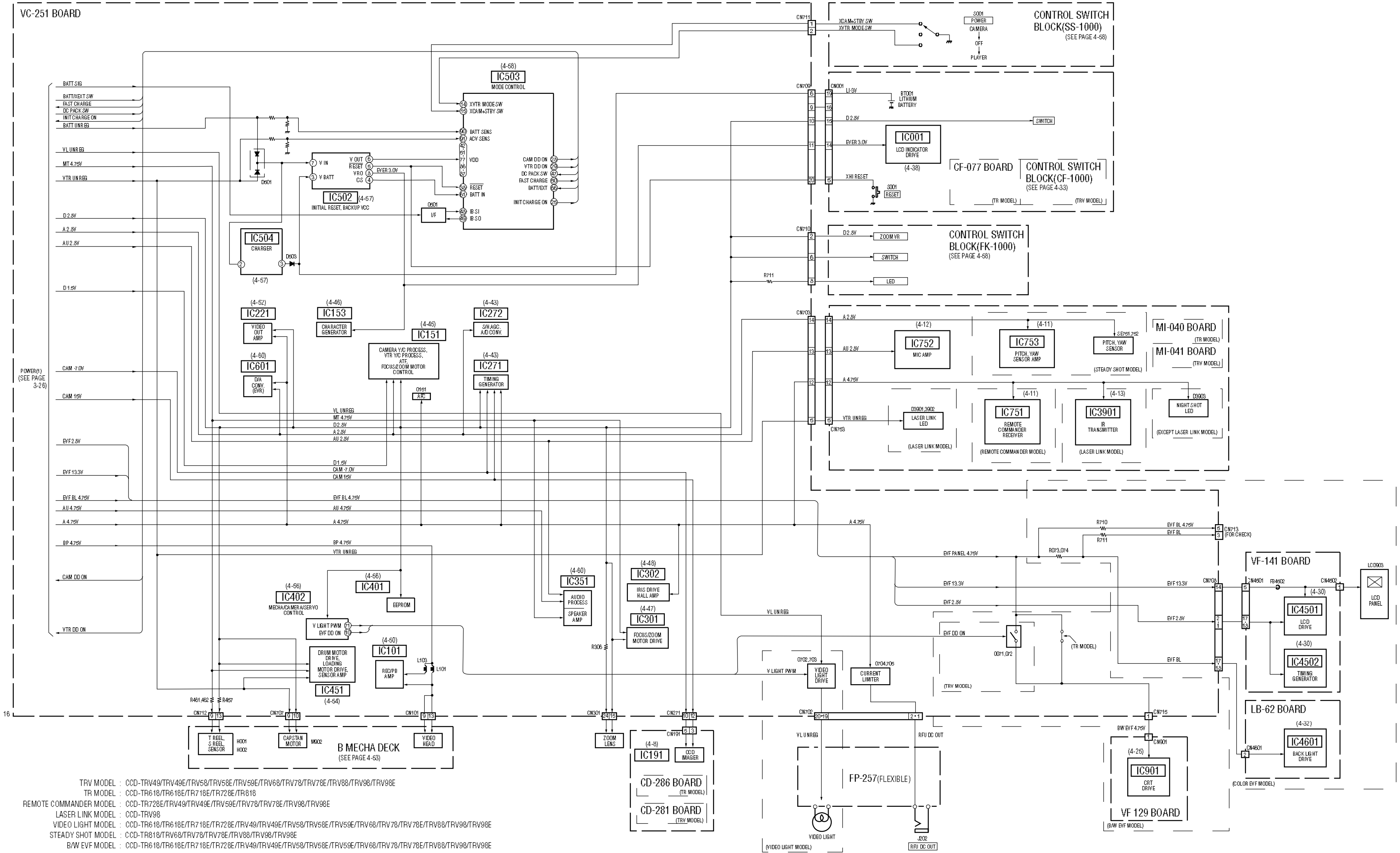
( ) : Page No. shown in ( ) indicates the page to refer on the schematic diagram.


VC-251 BOARD
BT901 BATTERY TERMINAL
BATT UNREG
DC PACK SW
BATT SIG
BATT GND
BATT/EXT
ACV UNREG
ACV GND
DC IN
CN001
DC PACK SW
BATT SIG
BATT/EXT SW
F001
Q001,003,004 CHARGE CONTROL
INIT CHARGE ON
Q002
FAST CHAREG
F004
BL UNREG
(TRV MODEL)
F003
MT UNREG
F002
VTR UNREG
Q014,015 4.75V REG
(4-61)
IC001 (1/2) DC/DC CONVERTER
VCC
CT
RT
OUTPUT-1
MOS GATE-1
OUTPUT MONITOR-1
OUTPUT-4
OUTPUT MONITOR-4
OUTPUT VCC7
OUTPUT VCC 1,2,3
COMP
OUTPUT-3
OUTPUT MONITOR-3
OUTPUT-2
OUTPUT MONITOR-2
OUTPUT-7
OUTPUT MONITOR-7
MONITOR INPUT-7
STANDBY-3
STANDBY
STANDBY-7
VREF
DRUM/CAPSTAN PWM DRIVE
OUTPUT VCC 4,5,6
Q010 SWITCHING
L004
L008 D 2.8V
L009 A 2.8V
L010 AU 2.8V
FB001 EVF 2.8V
Q009 SWITCHING
L007
L011
D 1.5V
T001
D006 RECT
(TRV MODEL)
Q027,028 -15.3V REG
PANEL -15.3V
Q007 SWITCHING
D007(1/2)
Q019,021 -7.0V REG
CAM -7.0V
D007(2/2)
Q022,023 +15V REG
CAM 15V
D010
Q018 EMERGENCY DETECT
(COLOR EVF MODEL)
FB002
EVF 2.8V
EVF 13.3V
(TRV MODEL)
FB003
PANEL 13.3V
Q008 SWITCHING
L002
L012 EVF PANEL 4.75V
L013 AU 4.75V
L014 A 4.75V
L016 RP 4.75V
(TRV MODEL)
Q006 SWITCHING
L001
L003
BL REG
BL CONT
CAM DD ON
VTR DD ON
SERVO BLOCK
Q014,016 DRUM VS CAP VS SWITCHING
BATT SIG
BATT/XEXT SW
FAST CHARGE
DC PACK SW
INIT CHARGE ON
BATT UNREG
VL UNREG
MT 4.75V
VTR UNREG
D 2.8V
A 2.8V
AU 2.8V
D 1.5V
POWER(2) (SEE PAGE 3-27)
(TRV MODEL)
PANEL 2.8V
PANEL 4.75V
PANEL 13.3V
PANEL -15.3V
BL CONT
BL REG
CN701
(TRV MODEL)
PD-131 BOARD
(4-20)
IC5501 LCD DRIVE
(4-20)
IC5502 TIMING GENERATOR
Q5502-5506
PANEL 13.3V
PANEL 4.75V
PANEL -15.3V
PANEL 2.8V
VGH
VSH5V
VGL
VHS 3V
LCD901 LCD PANEL
CN5501
IC5601 IC5602 (4-21)
BL REG
BL CONT
BACK LIGHT DRIVE
BL HIGH
CN5601
ND901 BACK LIGHT
CN5701
16

TRV MODEL : CCD-TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/
TRV78/TRV78E/TRV88/TRV98/TRV98E
TR MODEL : CCD-TR618/TR618E/TR718E/TR728E/TR818
B/W EVF MODEL : CCD-TR618/TR618E/TR718E/TR728E/TRV49/TRV49E/
TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E
COLOR EVF MODEL : CCD-TR818

3-13. POWER BLOCK DIAGRAM (2/2)

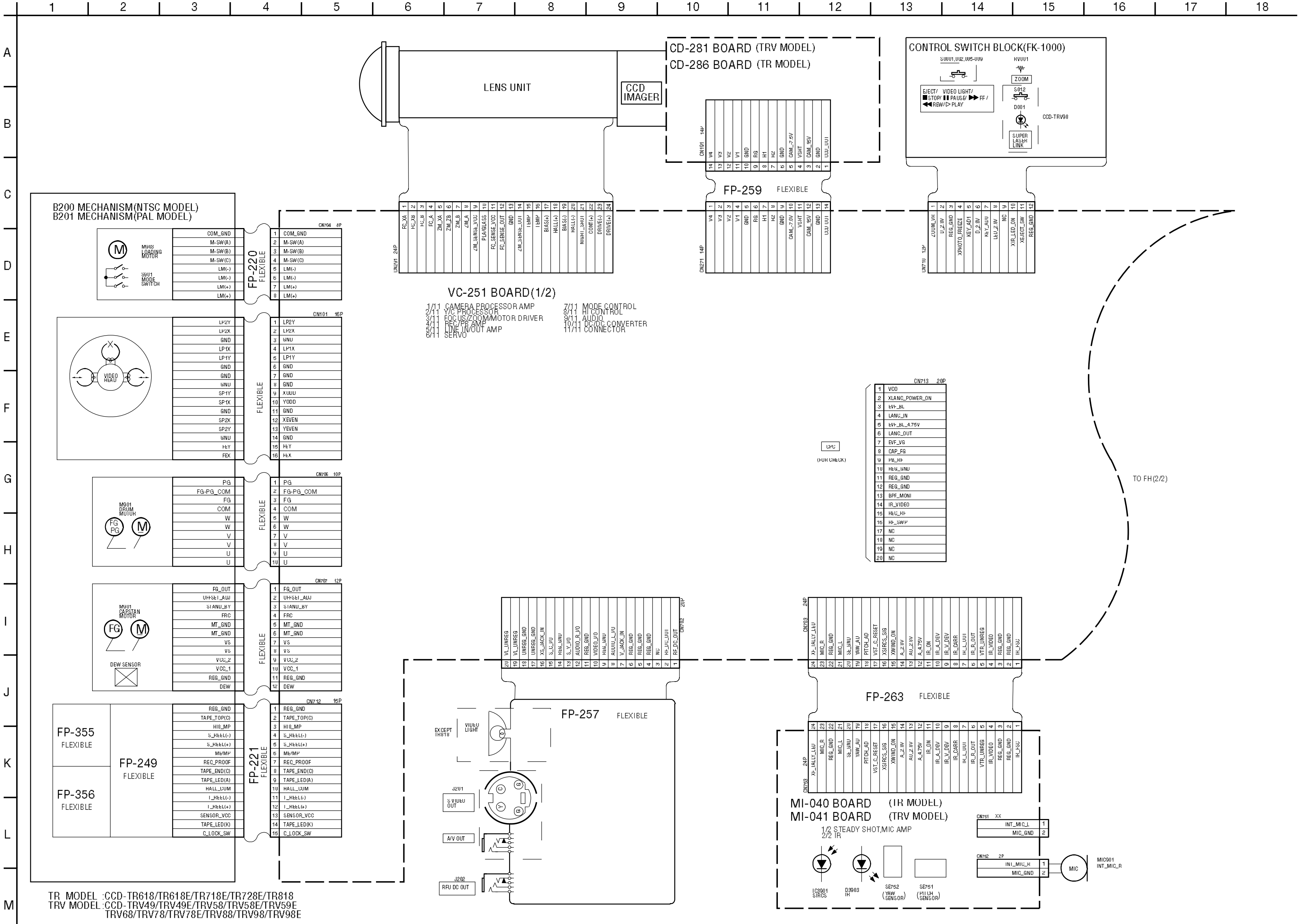
( ) : Page No. shown in ( ) indicates the page to refer on the schematic diagram.


VC-251 BOARD
IC503 (4-68) MODE CONTROL
IC502 (4-57) INITIAL RESET, BACKUP VCC
IC504 (4-57) CHARGER
D601
D603
IC221 (4-52) VIDEO OUT AMP
IC153 (4-46) CHARACTER GENERATOR
IC151 (4-45) CAMERA Y/C PROCESS, VTR Y/C PROCESS, ATF, FOCUS/ZOOM MOTOR CONTROL
IC272 (4-43) S/H, AGC, A/D CONV.
IC601 (4-60) D/A CONV. (EVR)
IC271 (4-43) TIMING GENERATOR
IC402 (4-66) MECHA/CAMERA/SERVO CONTROL
IC401 (4-66) EEPROM
IC451 (4-64) DRUM MOTOR DRIVE, LOADING MOTOR DRIVE, SENSOR AMP
IC101 (4-60) REC/PB AMP
IC351 (4-60) AUDIO PROCESS, SPEAKER AMP
IC302 (4-48) IRIS DRIVE HALL AMP
IC301 (4-47) FOCUS/ZOOM MOTOR DRIVE
POWER(1) (SEE PAGE 3-26)
CONTROL SWITCH BLOCK(SS-1000) (SEE PAGE 4-68)
S001 POWER CAMERA OFF PLAYER
CF-077 BOARD
IC001 (4-38) LCD INDICATOR DRIVE
BT001 LITHIUM BATTERY
CONTROL SWITCH BLOCK(CF-1000) (SEE PAGE 4-33)
CONTROL SWITCH BLOCK(FK-1000) (SEE PAGE 4-58)
ZOOM VR
SWITCH
LED
MI-040 BOARD (TR MODEL)
MI-041 BOARD (TRV MODEL)
IC752 (4-12) MIC AMP
IC753 (4-11) PITCH, YAW SENSOR AMP
SE751,752 PITCH, YAW SENSOR (STEADY SHOT MODEL)
D3901,3902 LASER LINK LED (LASER LINK MODEL)
IC751 (4-11) REMOTE COMMANDER RECEIVER (REMOTE COMMANDER MODEL)
IC3901 (4-13) IR TRANSMITTER (LASER LINK MODEL)
D3903 NIGHT SHOT LED (EXCEPT LASER LINK MODEL)
VF-141 BOARD
IC4501 (4-30) LCD DRIVE
IC4502 (4-30) TIMING GENERATOR
LCD903 LCD PANEL
LB-62 BOARD
IC4601 (4-32) BACK LIGHT DRIVE (COLOR EVF MODEL)
VF 129 BOARD (B/W EVF MODEL)
IC901 (4-26) CRT DRIVE
Q702,703 VIDEO LIGHT DRIVE
Q704,706 CURRENT LIMITER
FP-257(FLEXIBLE)
VIDEO LIGHT (VIDEO LIGHT MODEL)
J202 RFU DC OUT
B MECHA DECK (SEE PAGE 4-53)
T REEL, S REEL, SENSOR H001 H002
CAPSTAN MOTOR M902
VIDEO HEAD
ZOOM LENS
CD-286 BOARD (TR MODEL)
CD-281 BOARD (TRV MODEL)
IC191 (4-8) CCD IMAGER

TRV MODEL : CCD-TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E
TR MODEL : CCD-TR618/TR618E/TR718E/TR728E/TR818
REMOTE COMMANDER MODEL : CCD-TR728E/TRV49/TRV49E/TRV59E/TRV78/TRV78E/TRV98/TRV98E
LASER LINK MODEL : CCD-TRV98
VIDEO LIGHT MODEL : CCD-TR618/TR618E/TR718E/TR728E/TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E
STEADY SHOT MODEL : CCD-TR818/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E
B/W EVF MODEL : CCD-TR618/TR618E/TR718E/TR728E/TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E
COLOR EVF MODEL : CCD-TR818

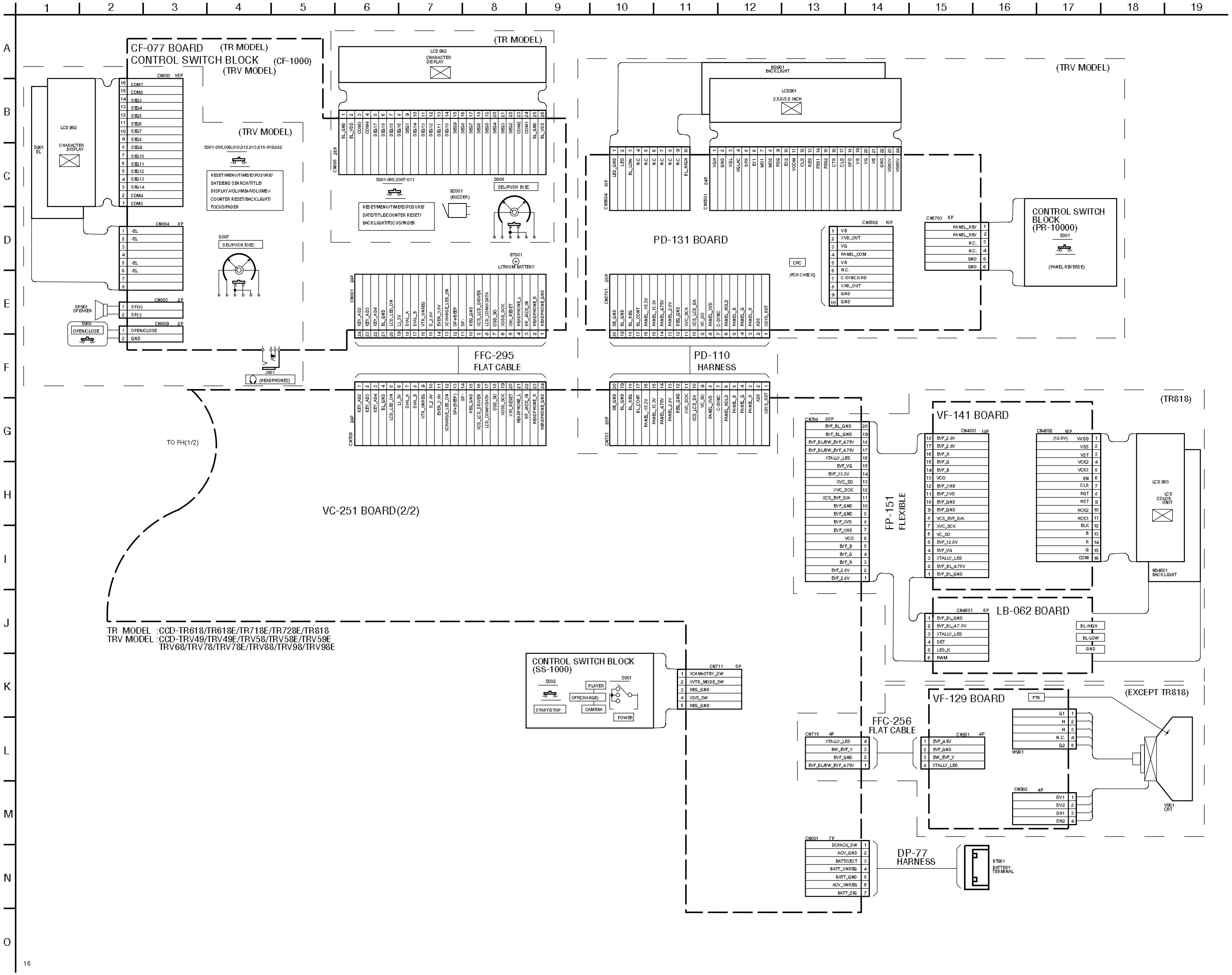
SECTION 4
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. FRAME SCHEMATIC DIAGRAM (1/2)


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
A B C D E F G H I J K L M
LENS UNIT
CCD IMAGER
CD-281 BOARD (TRV MODEL)
CD-286 BOARD (TR MODEL)
CN191 14P
V4 V3 V2 V1 GND RG H1 H2 GND CAM_-7.5V VSHT CAM_15V GND CCD OUT
CONTROL SWITCH BLOCK(FK-1000)
S001,002,005-009
RV001
ZOOM
S012
EJECT/ VIDEO LIGHT/
■STOP/ ▮▮PAUSE/ ▶▶FF/
◀◀REW/▷PLAY
D001
CCD-TRV98
SUPER LASER LINK
FP-259 FLEXIBLE
B200 MECHANISM(NTSC MODEL)
B201 MECHANISM(PAL MODEL)
M903 LOADING MOTOR
S901 MODE SWITCH
COM_GND M-SW(A) M-SW(B) M-SW(C) LM(-) LM(-) LM(+) LM(+)
FP-220 FLEXIBLE
CN704 8P
CN2101 24P
FC_XA FC_XB FC_B FC_A ZM_XA ZM_XB ZM_B ZM_A ZM_SENSE_VCC PLA/BIASS FC_SENSE_OUT FC_SENSE_VCC GND ZM_SENSE_OUT LBMP LBMP BIAS(+) HALL(+) BIAS(-) HALL(-) IRIS_SHUT CONT(+) DRIVE(-) DRIVE(+)
CN271 14P
V4 V3 V2 V1 GND RG H1 H2 GND CAM_-7.5V VSHT CAM_15V GND CCD OUT
CN710 12P
ZOOM_VR U_2.8V REG_GND XPHOTO_FREEZE KEY_AD1 D_2.8V KEY_AD0 LED_2.8V NC XIR_LED_ON XEJECT_SW REG_GND
VC-251 BOARD(1/2)
1/11 CAMERA PROCESSOR AMP
2/11 Y/C PROCESSOR
3/11 FOCUS/ZOOM/MOTOR DRIVER
4/11 REC/PB AMP
5/11 LINE IN/OUT AMP
6/11 SERVO
7/11 MODE CONTROL
8/11 HI CONTROL
9/11 AUDIO
10/11 DC/DC CONVERTER
11/11 CONNECTOR
CN101 16P
LP2Y LP2X GND LP1X LP1Y GND GND GND SP1Y SP1X GND SP2X SP2Y GND FEY FEX
VIDEO HEAD
LP2Y LP2X GND LP1X LP1Y GND GND GND XODD YODD GND XEVEN YEVEN GND FEY FEX
FLEXIBLE
CN713 20P
VCO XLANC_POWER_ON EVF_BL LANC_IN EVF_BL_4.75V LANC_OUT EVF_VG CAP_FG PB_RF REG_GND REG_GND REG_GND BPF_MONI IR_VIDEO REC_RF RF_SWP NC NC NC NC
CPC (FOR CHECK)
TO FH(2/2)
CN706 10P
M901 DRUM MOTOR
FG PG M
PG FG-PG_COM FG COM W W V V U U
CN707 12P
M901 CAPSTAN MOTOR
FG M
DEW SENSOR
FG_OUT OFFSET_ADJ STAND_BY FRC MT_GND MT_GND VS VS VCC_2 VCC_1 REG_GND DEW
CN712 15P
FP-355 FLEXIBLE
FP-356 FLEXIBLE
FP-249 FLEXIBLE
FP-221 FLEXIBLE
REG_GND TAPE_TOP(C) HI8_MP S_REEL(-) S_REEL(+) ME/MP REC_PROOF TAPE_END(C) TAPE_LED(A) HALL_COM T_REEL(-) T_REEL(+) SENSOR_VCC TAPE_LED(K) C_LOCK_SW
CN702 20P
VL_UNREG VL_UNREG UNREG_GND UNREG_GND XS_JACK_IN S_C_I/O S_Y_I/O AUDIO_R_I/O REG_GND VIDEO_I/O REG_GND AUDIO_L_I/O V_JACK_IN REG_GND REG_GND REG_GND NC RF_DC_OUT
FP-257 FLEXIBLE
EXCEPT TR818
VIDEO LIGHT
J201 S VIDEO OUT
A/V OUT
J202 RFU DC OUT
CN703 24P
XS_TALLY_LED MIC_R REG_GND MIC_L SE_GND YAW_AD PITCH_AD VST_C_RESET XSIRCS_SIG XWIND_ON A_2.8V AU_2.8V A_4.75V IR_ON IR_A_DRV IR_B_DRV IR_CARR IR_L_OUT IR_R_OUT VTR_UNREG IR_VIDEO REG_GND REG_GND IR_FSC
FP-263 FLEXIBLE
CN753 24P
MI-040 BOARD (TR MODEL)
MI-041 BOARD (TRV MODEL)
1/2 STEADY SHOT,MIC AMP
2/2 IR
CN751 XX INT_MIC_L MIC_GND
CN752 2P INT_MIC_R MIC_GND
MIC901 INT_MIC_R
MIC
IC3901 SIRCS
D3903 IR
SE752 (YAW SENSOR)
SE751 (PITCH SENSOR)

TR MODEL :CCD-TR618/TR618E/TR718E/TR728E/TR818
TRV MODEL :CCD-TRV49/TRV49E/TRV58/TRV58E/TRV59E
TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E

FRAME SCHEMATIC DIAGRAM (2/2)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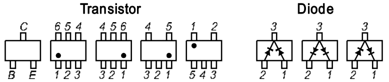
I
J
K
L
M
N
O
CF-077 BOARD (TR MODEL)
CONTROL SWITCH BLOCK (CF-1000)
(TRV MODEL)
(TR MODEL)
(TRV MODEL)
LCD902 CHARACTER DISPLAY
DS01 EL
CN003 16P
CN004 6P
CN005 2P
CN009 2P
SP901 SPEAKER
S002 OPEN/CLOSE
S001-005,009,010,012,013,015-019,022
RESET/MENU/TIME/EXPOSURE/ DATE/END SEARCH/TITLE/ DISPLAY/VOLUME/VOLUME-/ COUNTER RESET/BACKLIGHT/ FOCUS/FADER
S007 SEL/PUSH EXEC
S001-005,S007-011
RESET/MENU/TIME/EXPOSURE/ DATE/TITLE/COUNTER RESET/ BACKLIGHT/FOCUS/FADER
BZ001 (BUZZER)
S006 SEL/PUSH EXEC
BT001 LITHIUM BATTERY
J001 (HEADPHONES)
CN006 26P
CN001 24P
FFC-295 FLAT CABLE
CN709 24P
ND901 BACKLIGHT
LCD901 2.5/3.5 INCH
CN5504 10P
CN5501 24P
PD-131 BOARD
CN5502 10P
CN5701 20P
CPC (FOR CHECK)
PD-110 HARNESS
CN701 20P
CN5703 6P
CONTROL SWITCH BLOCK (PR-10000)
S001 (PANEL REVERSE)
(TR818)
VF-141 BOARD
CN706 20P
CN4501 16P
CN4502 16P
FP-151 FLEXIBLE
LCD903 LCD COLOR UNIT
ND4601 BACKLIGHT
LB-062 BOARD
CN4601 6P
BL-HIGH
BL-LOW
GND
TO FH(1/2)
VC-251 BOARD(2/2)
TR MODEL :CCD-TR618/TR618E/TR718E/TR728E/TR818
TRV MODEL :CCD-TRV49/TRV49E/TRV58/TRV58E/TRV59E
TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E
CONTROL SWITCH BLOCK (SS-1000)
S002 START/STOP
S001 PLAYER OFF(CHARGE) CAMERA POWER
CN711 5P
XCAM+STBY_SW
XVTR_MODE_SW
REG_GND
XS/S_SW
REG_GND
(EXCEPT TR818)
VF-129 BOARD
FFC-256 FLAT CABLE
CN715 4P
CN801 4P
W901
CN802 4P
V901 CRT
CN001 7P
DCPACK_SW
ACV_GND
BATT/XEXT
BATT_UNREG
BATT_GND
ACV_UNREG
BATT_SIG
DP-77 HARNESS
BT901 BATTERY TERMINAL

4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR WIRING BOARDS AND SCHEMATIC DIAGRAMS
(In addition to this, the necessary note is printed in each block)

(For printed wiring boards)

- ▒ : Pattern from the side which enables seeing.
  (The other layers' patterns are not indicated.)
- Through hole is omitted.
- Circled numbers refer to waveforms.
- There are few cases that the part printed on diagram isn't mounted in this model.
- Chip parts.



(For schematic diagrams)

- All capacitors are in mF unless otherwise noted. pF : m mF. 50V or less are not indicated except for electrolytics and tantalums.
- Chip resistors are 1/10W unless otherwise noted.
  kW=1000W, MW=1000kW.
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, Because it is damaged by the heat.
- Some chip part will be indicated as follows.

Example C541 L452
22U 10UH
TA A 2520

Kinds of capacitor

Temperature characteristics

External dimensions (mm)

- Constants of resistors, capacitors, ICs and etc with XX indicate that they are not used.
  In such cases, the unused circuits may be indicated.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- Signal name
  XEDIT → $\overline{\text{EDIT}}$ PB/XREC → PB/$\overline{\text{REC}}$
- ─▭─ : non flammable resistor
- ─∿─ : fusible resistor
- ▭ : panel designation
- ━━ : B+ Line *
- ▬ ▬ ▬ : B– Line *
- ⇨ : IN/OUT direction of (+,–) B LINE. *
- ▭ : adjustment for repair. *
- Circled numbers refer to waveforms. *

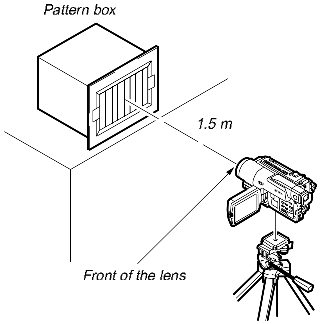
* Indicated by the color red.

Note :	**Note :**
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

(Measuring conditions voltage and waveform)

- Voltages and waveforms are measured between the measurement points and ground when camera shoots color bar chart of pattern box. They are reference values and reference waveforms. *
  (VOM of DC 10 MΩ input impedance is used.).
- Voltage values change depending upon input impedance of VOM used.) *

1. Connection



2. Adjust the distance so that the output waveform of Fig. a and the Fig. b can be obtain.

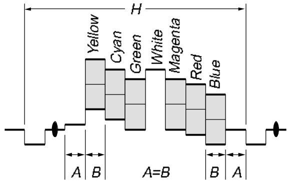


Fig. a (Video output terminal output waveform)

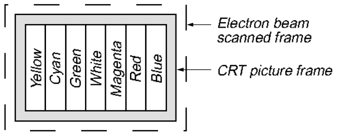
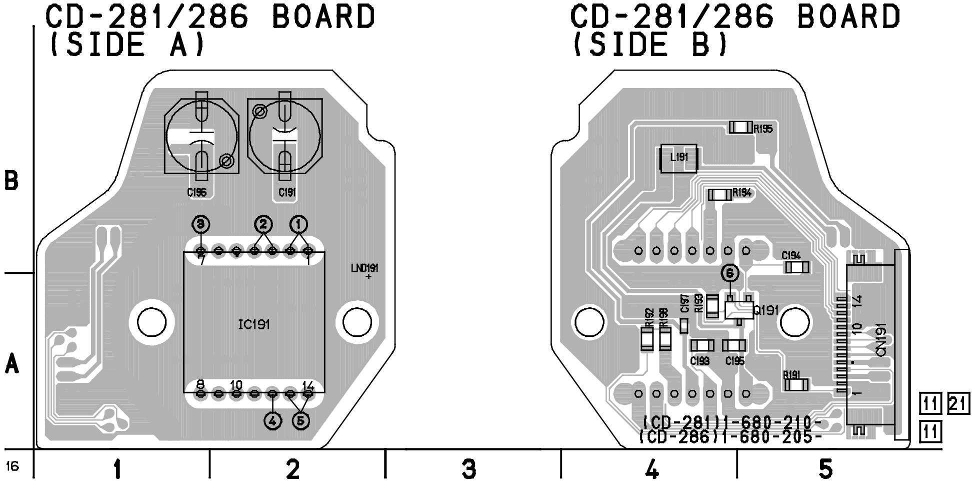


Fig.b (Picture on monitor TV)

When indicating parts by reference number, pleas include the board name.

CD-281/286 (CCD IMAGER) PRINTED WIRING BOARD

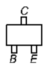
— Ref. No. CD-281/286 Board; 1,000 Series —


CD-281/286 BOARD
(SIDE A)
CD-281/286 BOARD
(SIDE B)
B
A
C195
C191
③
②
①
LND191
IC191
7
8
10
14
④
⑤
R195
L191
R194
C194
⑥
R192
R198
C197
R193
Q191
C193
C195
R191
14
10
1
CN191
(CD-281) 1-680-210-
(CD-286) 1-680-205-
11
21
11
16
1
2
3
4
5

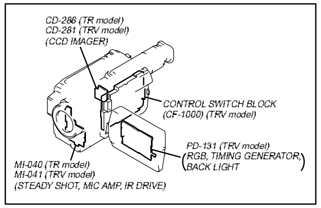
For printed wiring board

- Refer to page 4-70 for parts location.
- CD-281/286 board consists of multiple layers. However, only the sides (layers) A and B are shown.
- Chip parts

Transistor

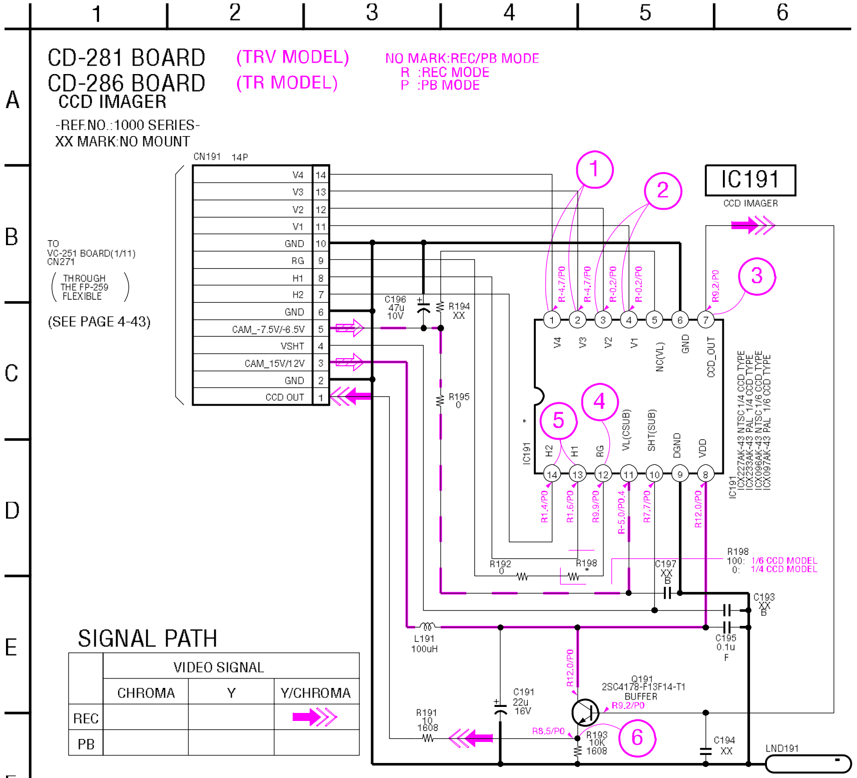


There are a few cases that the part printed on this diagram isn't mounted in this model.


CD-286 (TR model)
CD-281 (TRV model)
(CCD IMAGER)
CONTROL SWITCH BLOCK
(CF-1000) (TRV model)
PD-131 (TRV model)
(RGB, TIMING GENERATOR, BACK LIGHT)
MI-040 (TR model)
MI-041 (TRV model)
(STEADY SHOT, MIC AMP, IR DRIVE)

For Schematic Diagram

- Refer to page 4-66 for waveforms.


1
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5
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A
B
C
D
E
F
CD-281 BOARD (TRV MODEL)
CD-286 BOARD (TR MODEL)
CCD IMAGER
-REF.NO.:1000 SERIES-
XX MARK:NO MOUNT
NO MARK:REC/PB MODE
R :REC MODE
P :PB MODE
CN191 14P
V4 14
V3 13
V2 12
V1 11
GND 10
RG 9
H1 8
H2 7
GND 6
CAM_-7.5V/-6.5V 5
VSHT 4
CAM_15V/12V 3
GND 2
CCD OUT 1
TO VC-251 BOARD(1/11) CN271
(THROUGH THE FP-259 FLEXIBLE)
(SEE PAGE 4-43)
C196 47u 10V
R194 XX
R195 0
IC191
CCD IMAGER
①
②
③
④
⑤
⑥
R-4.7/P0
R-4.7/P0
R-0.2/P0
R-0.2/P0
R9.2/P0
V4
V3
V2
V1
NC(VL)
GND
CCD_OUT
H2
H1
RG
VL(CSUB)
SHT(SUB)
DGND
VDD
IC191
ICX227AK-43 NTSC 1/4 CCD TYPE
ICX233AK-43 PAL 1/4 CCD TYPE
ICX096AK-43 NTSC 1/6 CCD TYPE
ICX097AK-43 PAL 1/6 CCD TYPE
R1.4/P0
R1.6/P0
R9.9/P0
R-5.0/P0.4
R7.7/P0
R12.0/P0
R192 0
R198 *
R198
100: 1/6 CCD MODEL
0: 1/4 CCD MODEL
C197 XX B
C193 XX B
C195 0.1u F
L191 100uH
R12.0/P0
Q191
2SC4178-F13F14-T1
BUFFER
R9.2/P0
C191 22u 16V
R191 10 1608
R8.5/P0
R193 10K 1608
C194 XX
LND191

SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC			⇛
PB			

NTSC MODEL :CCD-TR618/TR818/TRV49/TRV58/TRV68/TRV78/TRV88/TRV98
PAL MODEL :CCD-TR618E/TR718E/TR728E/TRV49E/TRV58E/TRV59E/TRV78E/TRV98E
1/6 CCD MODEL :CCD-TR618/TR618E/TR718E/TR728E/TRV49/TRV49E/TRV58/TRV58E/TRV59E
1/4 CCD MODEL :CCD-TR818/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E
TRV MODEL :CCD-TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E
TR MODEL :CCD-TR618/TR618E/TR718E/TR728E/TR818

G

H

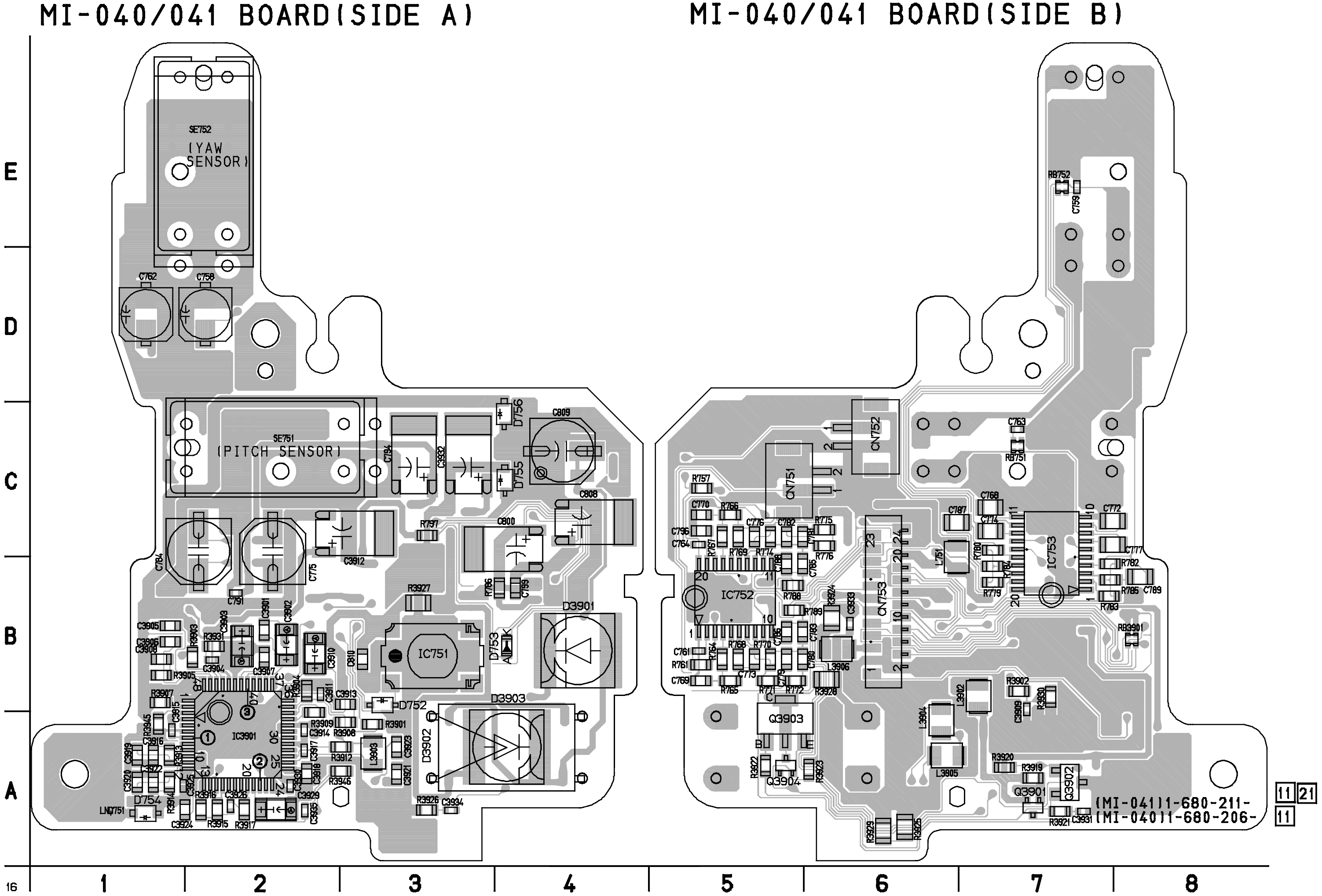
16

Precautions Upon Replacing CCD imager

- The CD-281/286 board mounted as a repair part is not equipped with a CCD imager.
  When replacing this board, remove the CCD imager from the old one and mount it onto the new one.
- If the CCD imager has been replaced, carry out all the adjustments for the camera section.
- As the CCD imager may be damaged by static electricity from its structure, handle it carefully like for the MOS IC.
  In addition, ensure that the receiver is not covered with dusts nor exposed to strong light.

MI-040/041 (STEADY SHOT, MIC AMP, IR DRIVE) PRINTED WIRING BOARD

— Ref. No. MI-040/041 Board; 10,000 Series —


MI-040/041 BOARD(SIDE A)
MI-040/041 BOARD(SIDE B)
SE752 (YAW SENSOR)
SE751 (PITCH SENSOR)
IC751
IC3901
IC752
IC753
CN751
CN752
CN753
D3901
D3902
D3903
D752
D753
D754
D755
D756
Q3903
Q3904
Q3901
Q3902
LND751
(MI-041)1-680-211-
(MI-040)1-680-206-
11
21
11
E
D
C
B
A
16
1
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3
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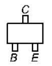
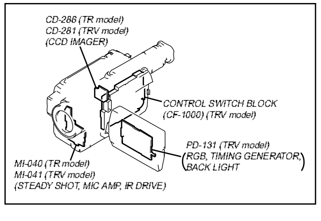
6
7
8

For printed wiring board

- Refer to page 4-70 for parts location.
- MI-040/041 board consists of multiple layers. However, only the sides (layers) A and B are shown.
- Chip parts

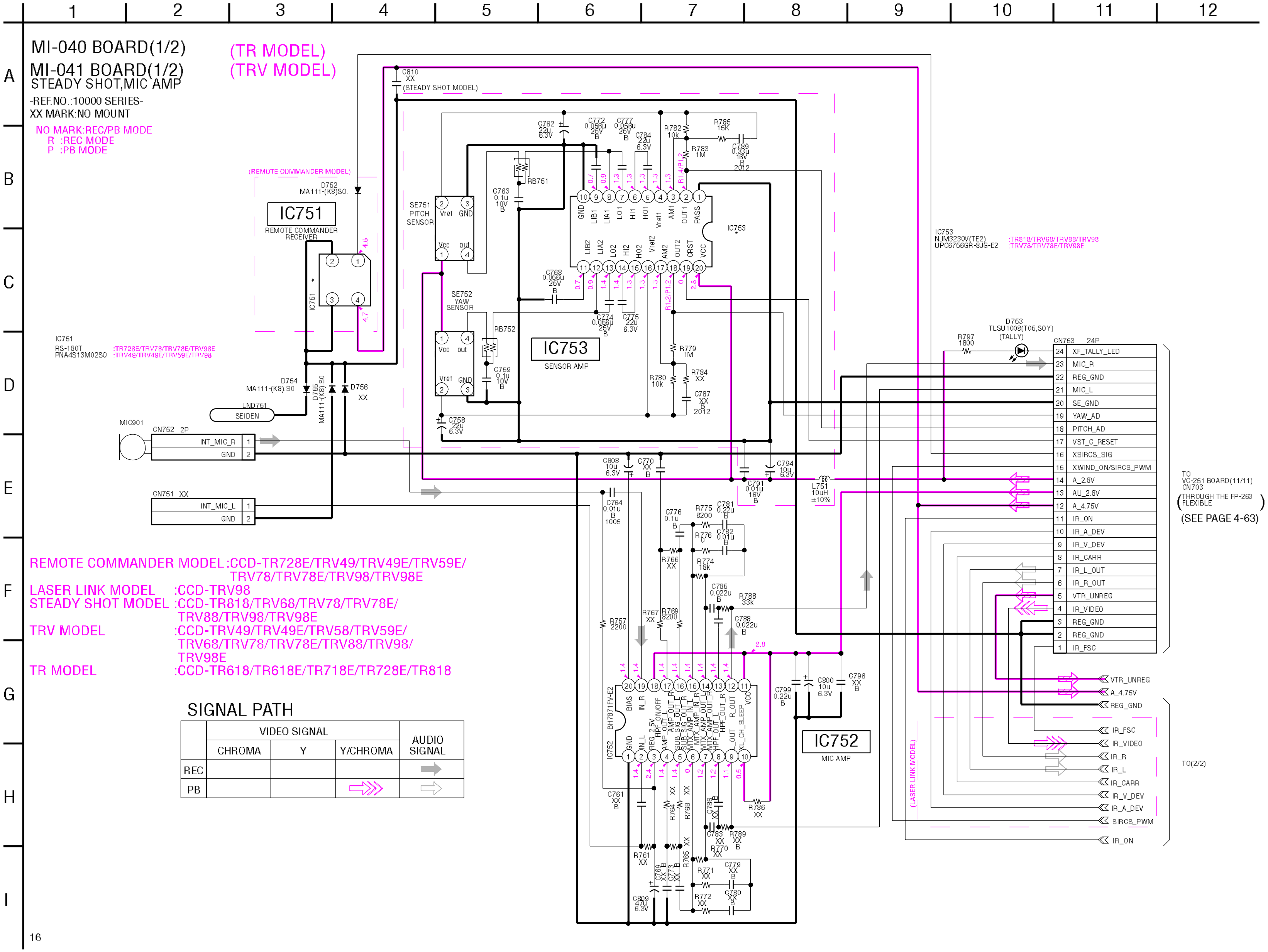
Transistor




CD-288 (TR model)
CD-281 (TRV model)
(CCD IMAGER)
CONTROL SWITCH BLOCK
(CF-1000) (TRV model)
PD-131 (TRV model)
(RGB, TIMING GENERATOR, BACK LIGHT)
MI-040 (TR model)
MI-041 (TRV model)
(STEADY SHOT, MIC AMP, IR DRIVE)

There are a few cases that the part printed on this diagram isn't mounted in this model.

For Schematic Diagram
- Refer to page 4-9 for printed wiring board.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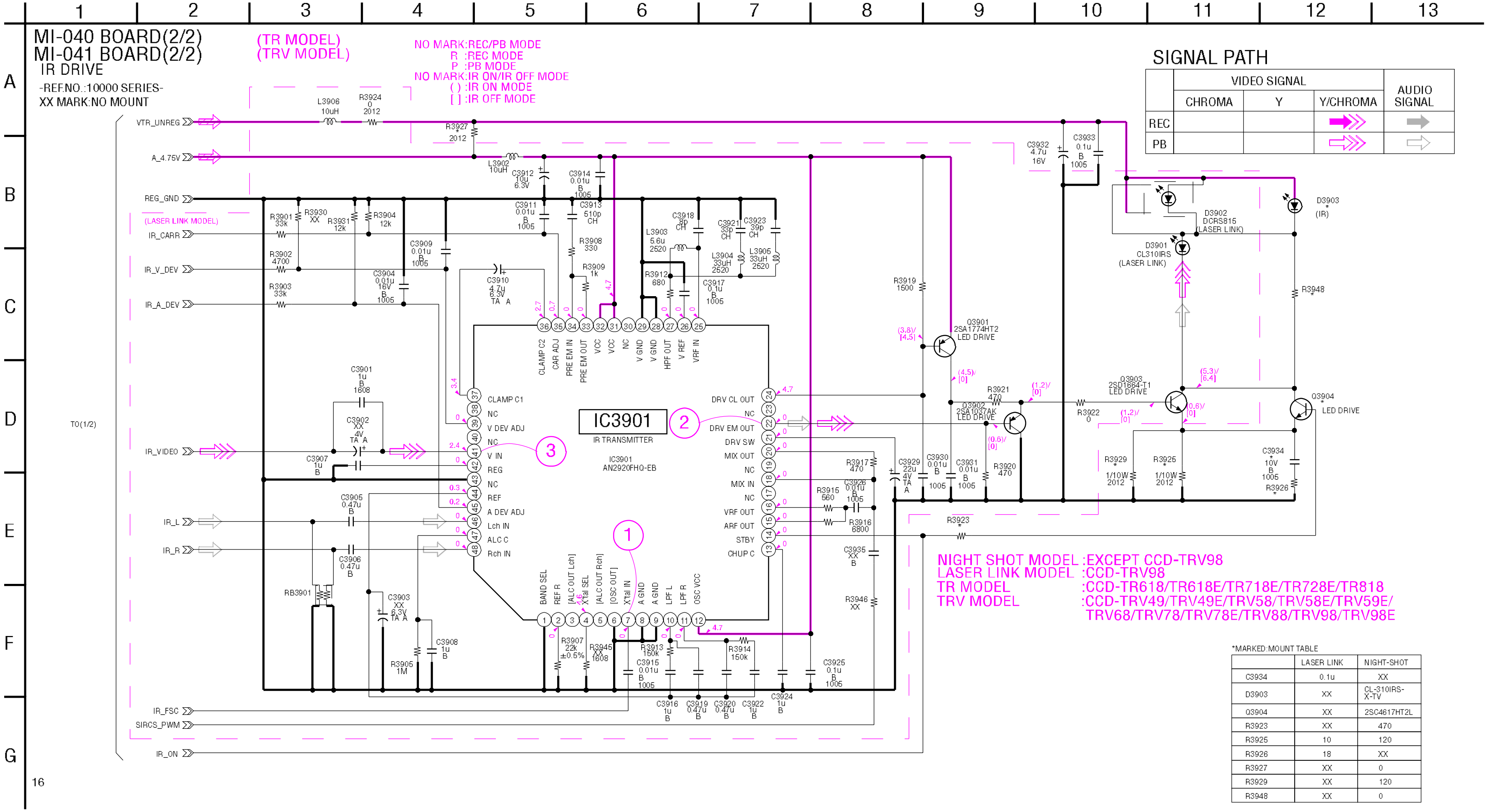
I
MI-040 BOARD(1/2)
MI-041 BOARD(1/2)
STEADY SHOT,MIC AMP
(TR MODEL)
(TRV MODEL)
-REF.NO.:10000 SERIES-
XX MARK:NO MOUNT
NO MARK:REC/PB MODE
R :REC MODE
P :PB MODE
(REMOTE COMMANDER MODEL)
IC751
REMOTE COMMANDER RECEIVER
IC751
RS-180T :TR728E/TRV78/TRV78E/TRV98E
PNA4S13M02S0 :TRV49/TRV49E/TRV59E/TRV98
D752 MA111-(K8).S0
D754 MA111-(K8).S0
D755 MA111-(K8).S0
D756 XX
LND751 SEIDEN
MIC901
CN752 2P
INT_MIC_R
GND
CN751 XX
INT_MIC_L
GND
C810 XX
(STEADY SHOT MODEL)
SE751 PITCH SENSOR
SE752 YAW SENSOR
Vref
GND
Vcc
out
RB751
RB752
C758 22u 6.3V
C759 0.1u 10V B
C762 22u 6.3V
C763 0.1u 10V B
C768 0.056u 25V B
C772 0.056u 25V B
C777 0.056u 25V B
C774 0.056u 25V B
C775 22u 6.3V
C784 22u 6.3V
R782 10k
R783 1M
R785 15K
C789 0.33u 16V B 2012
R779 1M
R780 10k
R784 XX
C787 XX B 2012
IC753
SENSOR AMP
GND
LIB1
LIA1
LO1
HI1
HO1
Vref1
AM1
OUT1
PASS
LIB2
LIA2
LO2
HI2
HO2
Vref2
AM2
OUT2
CRST
VCC
IC753
NJM3230V(TE2) :TR818/TRV68/TRV88/TRV98
UPC6756GR-8JG-E2 :TRV78/TRV78E/TRV98E
D753 TLSU1008(T05,SOY) (TALLY)
R797 1800
CN753 24P
XF_TALLY_LED
MIC_R
REG_GND
MIC_L
SE_GND
YAW_AD
PITCH_AD
VST_C_RESET
XSIRCS_SIG
XWIND_ON/SIRCS_PWM
A_2.8V
AU_2.8V
A_4.75V
IR_ON
IR_A_DEV
IR_V_DEV
IR_CARR
IR_L_OUT
IR_R_OUT
VTR_UNREG
IR_VIDEO
REG_GND
REG_GND
IR_FSC
TO VC-251 BOARD(11/11) CN703
(THROUGH THE FP-263 FLEXIBLE)
(SEE PAGE 4-63)
C808 10u 6.3V
C770 XX B
C791 0.01u 16V B
C794 10u 6.3V
L751 10uH ±10%
C764 0.01u B 1005
C776 0.1u B
R775 8200
C781 0.22u B
R776 0
C782 0.01u B
R766 XX
R774 18k
C785 0.022u B
R788 33k
C788 0.022u B
R757 2200
R767 XX
R769 8200
IC752
MIC AMP
BH7871FV-E2
BIAS
IN_R
IN_L
REG_2.5V
HPF_ON/OFF
AMP_OUT_R
AMP_OUT_L
SUB_SIG_OUT_R
MTX_AMP_IN_R
MTX_AMP_OUT_L
HPF_OUT_R
L_OUT
R_OUT
XL_OH_SLEEP
VCC
C799 0.22u B
C800 10u 6.3V
C796 XX B
C761 XX B
R764 XX
R768 XX
C786 XX B
R786 XX
C783 XX
R789 XX B
R770 XX
R761 XX
R765 XX
C769 XX B
C778 XX
R771 XX
C779 XX B
R772 XX
C780 XX B
C809 47u 6.3V
VTR_UNREG
A_4.75V
REG_GND
IR_FSC
IR_VIDEO
IR_R
IR_L
IR_CARR
IR_V_DEV
IR_A_DEV
SIRCS_PWM
IR_ON
(LASER LINK MODEL)
TO(2/2)
16

REMOTE COMMANDER MODEL :CCD-TR728E/TRV49/TRV49E/TRV59E/
TRV78/TRV78E/TRV98/TRV98E
LASER LINK MODEL :CCD-TRV98
STEADY SHOT MODEL :CCD-TR818/TRV68/TRV78/TRV78E/
TRV88/TRV98/TRV98E
TRV MODEL :CCD-TRV49/TRV49E/TRV58/TRV59E/
TRV68/TRV78/TRV78E/TRV88/TRV98/
TRV98E
TR MODEL :CCD-TR618/TR618E/TR718E/TR728E/TR818

SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				➡
PB			⇛	⇨

For Schematic Diagram
- Refer to page 4-9 for printed wiring board.
- Refer to page 4-66 for waveforms.


1
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12
13
A
B
C
D
E
F
G
MI-040 BOARD(2/2)
MI-041 BOARD(2/2)
IR DRIVE
-REF.NO.:10000 SERIES-
XX MARK:NO MOUNT
(TR MODEL)
(TRV MODEL)
NO MARK:REC/PB MODE
R :REC MODE
P :PB MODE
NO MARK:IR ON/IR OFF MODE
( ) :IR ON MODE
[ ] :IR OFF MODE
VTR_UNREG
A_4.75V
REG_GND
(LASER LINK MODEL)
IR_CARR
IR_V_DEV
IR_A_DEV
TO(1/2)
IR_VIDEO
IR_L
IR_R
IR_FSC
SIRCS_PWM
IR_ON
16
IC3901
IR TRANSMITTER
IC3901
AN2920FHQ-EB
CLAMP C2
CAR ADJ
PRE EM IN
PRE EM OUT
VCC
VCC
NC
V GND
V GND
HPF OUT
V REF
VRF IN
CLAMP C1
NC
V DEV ADJ
NC
V IN
REG
NC
REF
A DEV ADJ
Lch IN
ALC C
Rch IN
DRV CL OUT
NC
DRV EM OUT
DRV SW
MIX OUT
NC
MIX IN
NC
VRF OUT
ARF OUT
STBY
CHUP C
BAND SEL
REF R
[ALC OUT Lch]
X'tal SEL
[ALC OUT Rch]
[OSC OUT]
X'tal IN
A GND
A GND
LPF L
LPF R
OSC VCC
Q3901
2SA1774HT2
LED DRIVE
Q3902
2SA1037AK
LED DRIVE
Q3903
2SD1664-T1
LED DRIVE
Q3904
LED DRIVE
D3901
CL310IRS
(LASER LINK)
D3902
DCRS815
(LASER LINK)
D3903
(IR)
L3906 10uH
R3924 0 2012
R3927 2012
L3902 10uH
C3912 10u 6.3V
C3914 0.01u B 1005
C3911 0.01u B 1005
C3913 510p CH
R3908 330
R3909 1k
C3918 8p CH
L3903 5.6u 2520
C3921 33p CH
C3923 39p CH
L3904 33uH 2520
L3905 33uH 2520
R3912 680
C3917 0.1u B 1005
R3901 33k
R3930 XX
R3931 12k
R3904 12k
R3902 4700
R3903 33k
C3909 0.01u B 1005
C3904 0.01u 16V B 1005
C3910 4.7u 6.3V TA A
C3901 1u B 1608
C3902 XX 4V TA A
C3907 1u B
C3905 0.47u B
C3906 0.47u B
RB3901
C3903 XX 6.3V TA A
R3905 1M
C3908 1u B
R3907 22k ±0.5%
R3945 XX 1608
R3913 150k
C3915 0.01u B 1005
R3914 150k
C3916 1u B
C3919 0.47u B
C3920 0.47u B
C3922 1u B
C3924 1u B
C3925 0.1u B 1005
R3919 1500
C3932 4.7u 16V
C3933 0.1u B 1005
R3921 470
R3922 0
R3917 470
C3929 22u 4V TA A
C3930 0.01u B 1005
C3931 0.01u B 1005
R3920 470
R3915 560
C3926 0.01u B 1005
R3916 6800
C3935 XX B
R3946 XX
R3923
R3929 1/10W 2012
R3925 1/10W 2012
C3934 10V B 1005
R3926
R3948

SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC			➡	➡
PB			⇨	⇨

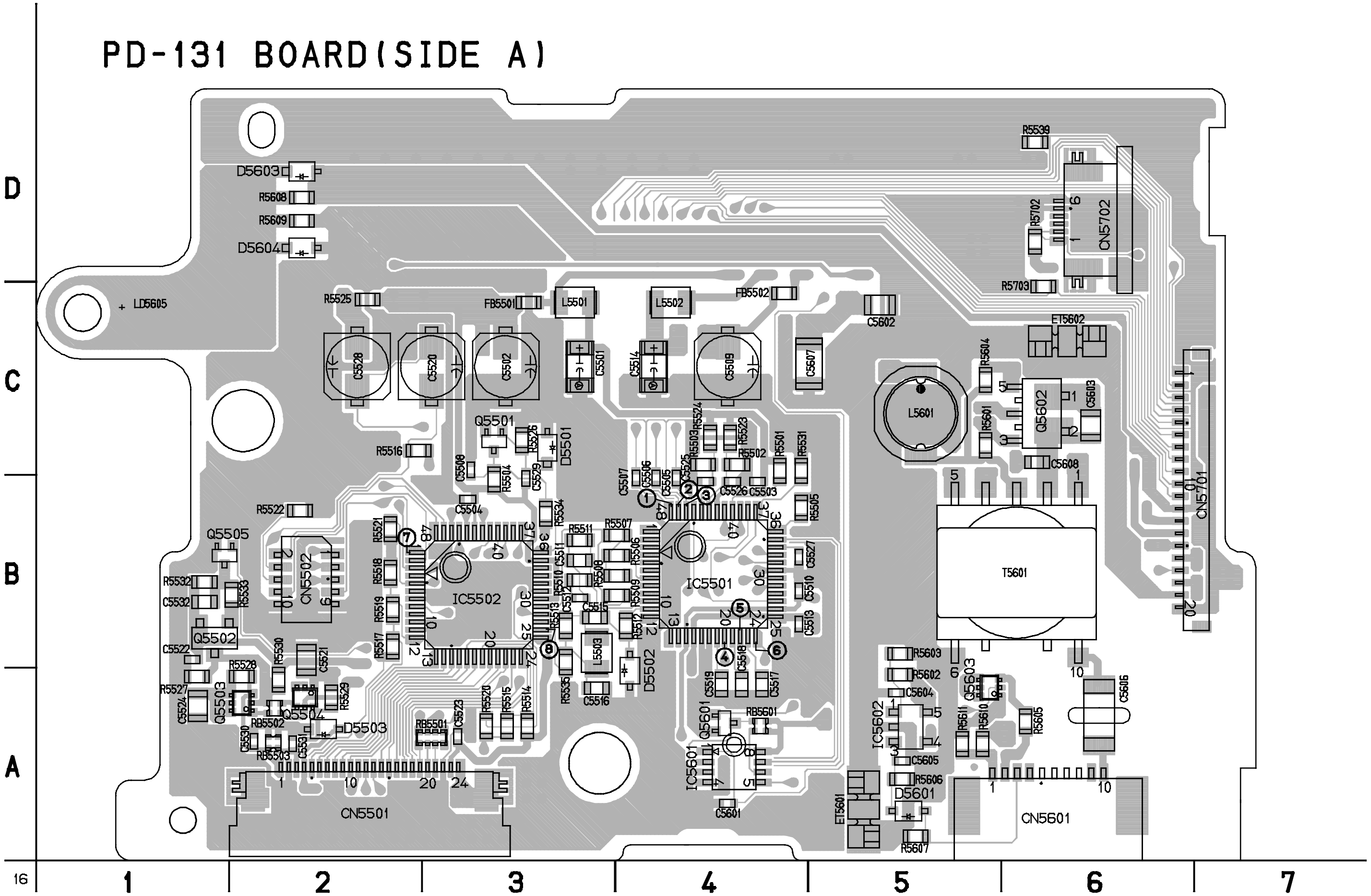
NIGHT SHOT MODEL :EXCEPT CCD-TRV98
LASER LINK MODEL :CCD-TRV98
TR MODEL :CCD-TR618/TR618E/TR718E/TR728E/TR818
TRV MODEL :CCD-TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E

*MARKED:MOUNT TABLE

	LASER LINK	NIGHT-SHOT
C3934	0.1u	XX
D3903	XX	CL-310IRS-X-TV
Q3904	XX	2SC4617HT2L
R3923	XX	470
R3925	10	120
R3926	18	XX
R3927	XX	0
R3929	XX	120
R3948	XX	0

PD-131 (RGB, TIMING GENERATOR, BACK LIGHT) PRINTED WIRING BOARD

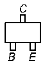
— Ref. No. PD-131 Board; 10,000 Series —


PD-131 BOARD(SIDE A)
D
C
B
A
16
1
2
3
4
5
6
7
D5603
R5608
R5609
D5604
LD5605
R5525
FB5501
L5501
L5502
FB5502
C5602
R5539
R5702
CN5702
R5703
ET5602
C5528
C5520
C5502
C5501
C5514
C5509
C5607
R5604
L5601
R5601
Q5602
C5603
C5608
CN5701
Q5501
R5516
R5526
D5501
R5504
C5529
C5508
C5504
R5524
R5503
R5523
R5502
R5501
R5531
C5507
C5506
C5505
C5525
C5526
C5503
R5505
R5522
Q5505
CN5502
R5521
R5518
R5519
R5517
IC5502
R5534
R5511
R5507
R5510
R5506
R5509
C5511
C5512
C5515
R5513
R5512
R5508
IC5501
C5527
C5510
C5513
T5601
R5532
C5532
R5533
Q5502
C5522
R5528
R5530
C5521
R5527
C5524
Q5503
Q5504
R5529
RB5502
C5530
C5531
RB5503
D5503
RB5501
C5523
R5520
R5515
R5514
R5535
L5503
C5516
D5502
C5519
C5518
C5517
R5603
R5602
C5604
Q5603
C5606
IC5602
R5611
R5610
R5605
C5605
R5606
D5601
Q5601
RB5601
IC5601
C5601
ET5601
R5607
CN5501
CN5601
1
10
20
24

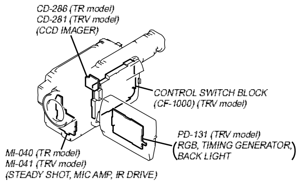
For printed wiring board

- Refer to page 4-70 for parts location.
- PD-131 board consists of multiple layers. However, only the sides (layers) A and B are shown.
- Chip parts

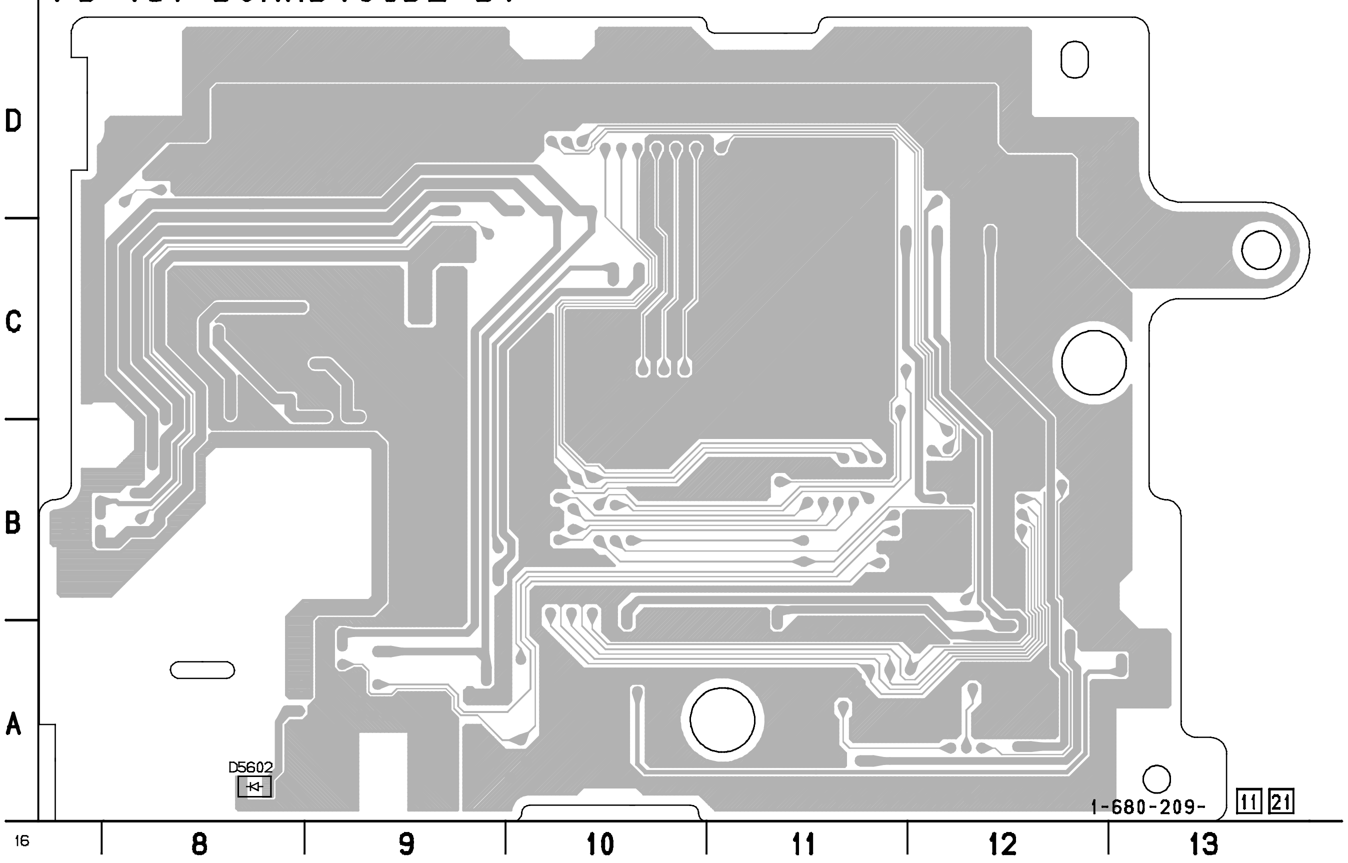
Transistor



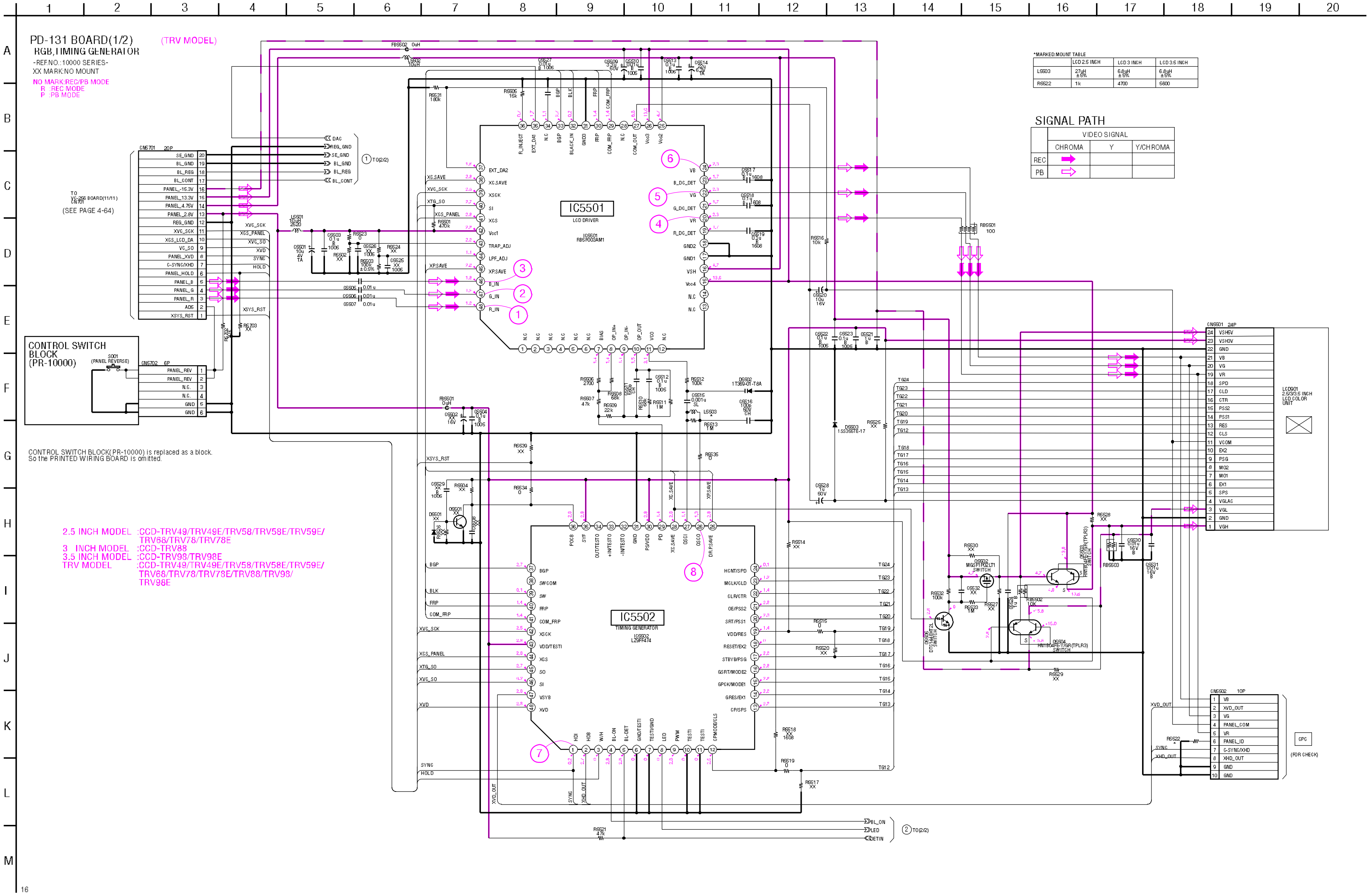
There are a few cases that the part printed on this diagram isn't mounted in this model.


CD-288 (TR model)
CD-281 (TRV model)
(CCD IMAGER)
CONTROL SWITCH BLOCK
(CF-1000) (TRV model)
PD-131 (TRV model)
(RGB, TIMING GENERATOR, BACK LIGHT)
MI-040 (TR model)
MI-041 (TRV model)
(STEADY SHOT, MIC AMP, IR DRIVE)

PD-131 BOARD(SIDE B)


D
C
B
A
D5602
1-680-209-
11
21
16
8
9
10
11
12
13

For Schematic Diagram
- Refer to page 4-15 for printed wiring board.
- Refer to page 4-66 for waveforms.


1
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9
10
11
12
13
14
15
16
17
18
19
20
A
B
C
D
E
F
G
H
I
J
K
L
M
CN5701 20P
SE_GND
BL_GND
BL_REG
BL_CONT
PANEL_-15.3V
PANEL_13.3V
PANEL_4.75V
PANEL_2.8V
REG_GND
XVC_SCK
XCS_LCD_DA
VC_SO
PANEL_XVD
C-SYNC/XHD
PANEL_HOLD
PANEL_B
PANEL_G
PANEL_R
ADS
XSYS_RST
DAC
REG_GND
SE_GND
BL_GND
BL_REG
BL_CONT
① TO(2/2)
TO VC-266 BOARD(11/11) CN1701
(SEE PAGE 4-64)
CONTROL SWITCH BLOCK (PR-10000)
S001 (PANEL REVERSE)
CN5702 6P
PANEL_REV
N.C.
GND
IC5501
LCD DRIVER
IC5501 RB5P003AM1
IC5502
TIMING GENERATOR
IC5502 L29FF474
EXT_DA2
XC.SAVE
XSCK
SI
XCS
Vcc1
TRAP_ADJ
LPF_ADJ
XP.SAVE
B_IN
G_IN
R_IN
VB
B_DC_DET
VG
G_DC_DET
VR
R_DC_DET
GND2
GND1
VSH
Vcc4
N.C
BGP
SWCOM
SW
FRP
COM_FRP
XSCK
VDD/TEST
XCS
SO
SI
VSYB
XVD
HCNT/SPD
MCLK/CLD
CLR/CTR
OE/PSS2
SRT/PSS1
VDD/RES
RESET/EX2
STBY/PSG
GSRT/MODE2
GPCK/MODE1
GRES/EX1
CP/SPS
CN5501 24P
VSH5V
VSH3V
GND
VB
VG
VR
SPD
CLD
CTR
PSS2
PSS1
RES
CLS
VCOM
EX2
PSG
MO2
MO1
EX1
SPS
VGLAC
VGL
VGH
LCD901 2.5/3/3.5 INCH LCD COLOR UNIT
Q5503 MGSF1P02LT1 SWITCH
Q5504 HN1B04FE-Y/GR(TPLR3) SWITCH
Q5505 DTC144EMT2L SWITCH
CN5502 10P
VB
XVD_OUT
VG
PANEL_COM
VR
PANEL_ID
C-SYNC/XHD
XHD_OUT
GND
CPC
(FOR CHECK)
BL_ON
LED
DETIN
② TO(2/2)

PD-131 BOARD(1/2) (TRV MODEL)
RGB,TIMING GENERATOR
-REF.NO.:10000 SERIES-
XX MARK:NO MOUNT
NO MARK:REC/PB MODE
R :REC MODE
P :PB MODE

CONTROL SWITCH BLOCK(PR-10000) is replaced as a block.
So the PRINTED WIRING BOARD is omitted.

2.5 INCH MODEL :CCD-TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E
3 INCH MODEL :CCD-TRV88
3.5 INCH MODEL :CCD-TRV98/TRV98E
TRV MODEL :CCD-TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E

*MARKED:MOUNT TABLE

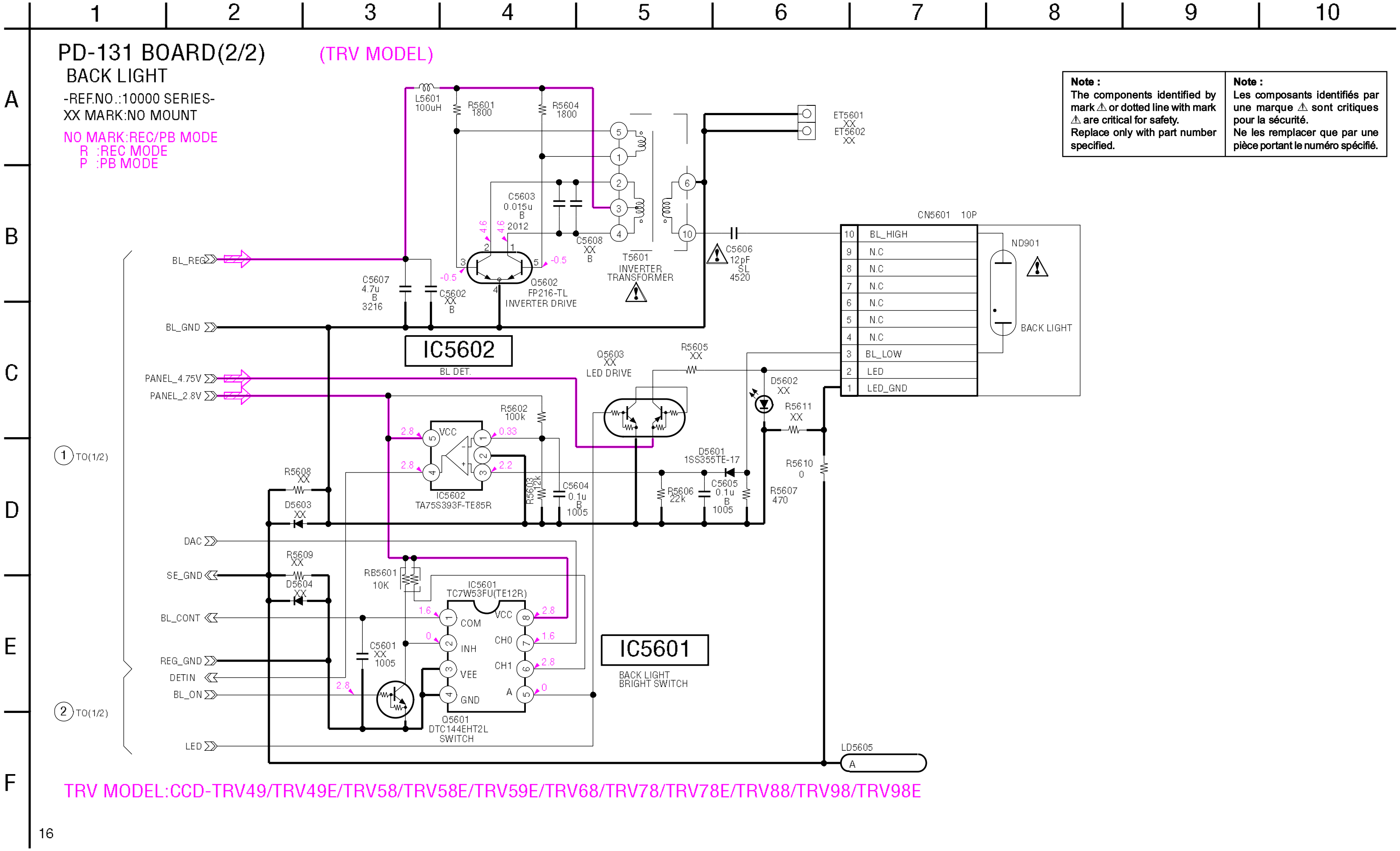
	LCD 2.5 INCH	LCD 3 INCH	LCD 3.5 INCH
L5503	27uH ±5%	6.8uH ±5%	6.8uH ±5%
R5522	1k	4700	5600

SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡		
PB	⇨		

16

For Schematic Diagram
- Refer to page 4-15 for printed wiring board.


1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
F
PD-131 BOARD(2/2)
BACK LIGHT
-REF.NO.:10000 SERIES-
XX MARK:NO MOUNT
(TRV MODEL)
NO MARK:REC/PB MODE
R :REC MODE
P :PB MODE
L5601
100uH
R5601
1800
R5604
1800
ET5601
XX
ET5602
XX
C5603
0.015u
B
2012
C5608
XX
B
T5601
INVERTER
TRANSFORMER
C5606
12pF
SL
4520
C5607
4.7u
B
3216
C5602
XX
B
Q5602
FP216-TL
INVERTER DRIVE
IC5602
BL DET.
BL_REG
BL_GND
PANEL_4.75V
PANEL_2.8V
DAC
SE_GND
BL_CONT
REG_GND
DETIN
BL_ON
LED
① TO(1/2)
② TO(1/2)
CN5601 10P
10 BL_HIGH
9 N.C
8 N.C
7 N.C
6 N.C
5 N.C
4 N.C
3 BL_LOW
2 LED
1 LED_GND
ND901
BACK LIGHT
Q5603
XX
LED DRIVE
R5605
XX
D5602
XX
R5611
XX
R5610
0
R5607
470
D5601
1SS355TE-17
R5606
22k
C5605
0.1u
B
1005
R5602
100k
R5603
12k
C5604
0.1u
B
1005
IC5602
TA75S393F-TE85R
VCC
R5608
XX
D5603
XX
R5609
XX
D5604
XX
RB5601
10K
IC5601
TC7W53FU(TE12R)
COM
INH
VEE
GND
VCC
CH0
CH1
A
C5601
XX
1005
Q5601
DTC144EHT2L
SWITCH
IC5601
BACK LIGHT
BRIGHT SWITCH
LD5605
A
4.6
4.6
-0.5
-0.5
2.8
2.8
0.33
2.2
1.6
0
2.8
1.6
2.8
0
2.8
16

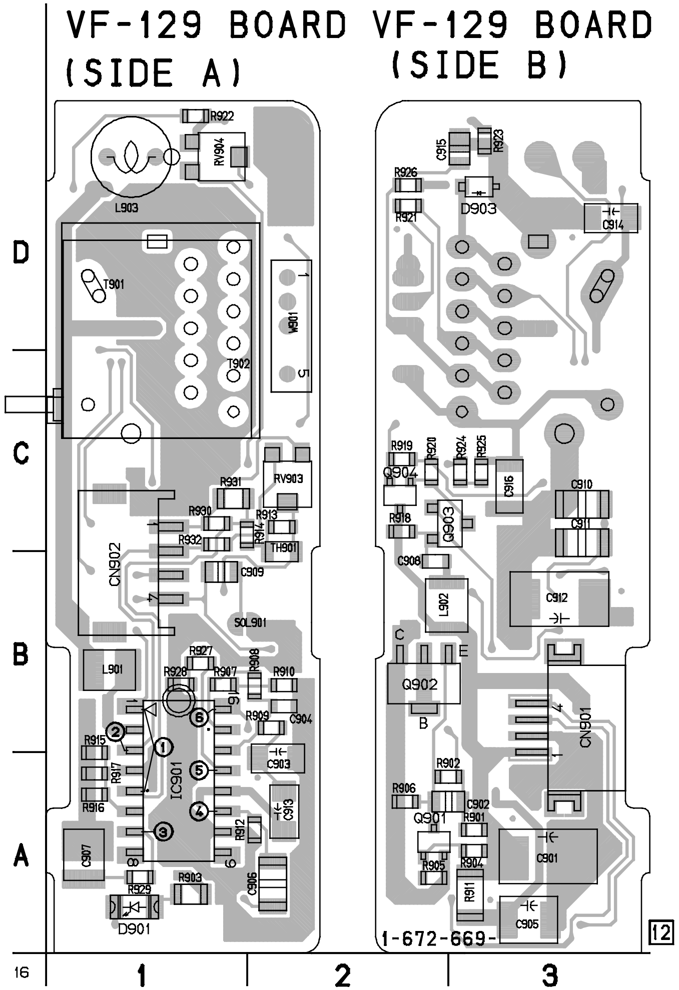
Note :
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Note :
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

TRV MODEL:CCD-TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E

VF-129 (B/W EVF) PRINTED WIRING BOARD

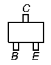
— Ref. No. VF-129 Board; 1,000 Series —


VF-129 BOARD (SIDE A)
VF-129 BOARD (SIDE B)
D
C
B
A
1
2
3
16
12
R922
RV904
L903
T901
T902
W901
1
5
RV903
R931
R930
R913
R914
R932
TH901
CN902
C909
SOL901
R927
R928
R907
R908
R910
L901
R909
C904
C903
R915
R917
IC901
C913
R916
R912
C907
R929
R903
C906
D901
① ② ③ ④ ⑤ ⑥
C915
R923
R926
D903
R921
C914
R919
R920
R924
R925
Q904
C916
C910
R918
Q903
C911
C908
L902
C912
C
E
B
Q902
CN901
R902
R906
C902
Q901
R901
C901
R905
R904
R911
C905
1-672-669-

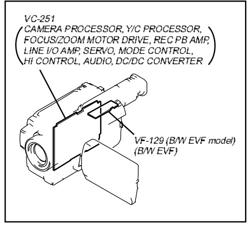
For printed wiring board

- Refer to page 4-71 for parts location.
- VF-129 board consists of multiple layers. However, only the sides (layers) A and B are shown.
- Chip parts

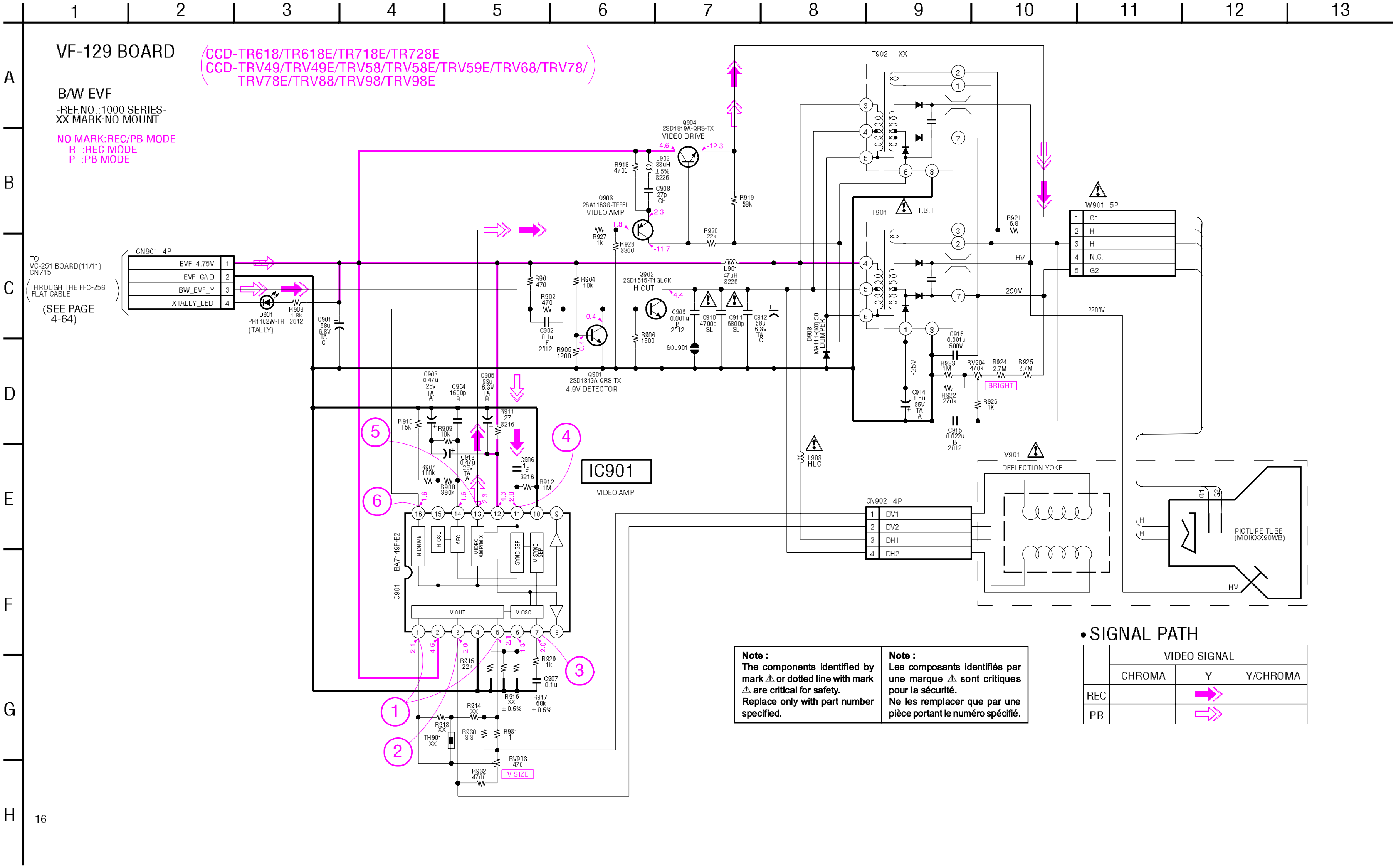
Transistor



There are a few cases that the part printed on this diagram isn't mounted in this model.


VC-251
(CAMERA PROCESSOR, Y/C PROCESSOR, FOCUS/ZOOM MOTOR DRIVE, REC PB AMP, LINE I/O AMP, SERVO, MODE CONTROL, HI CONTROL, AUDIO, DC/DC CONVERTER)
VF-129 (B/W EVF model) (B/W EVF)

For Schematic Diagram
- Refer to page 4-66 for waveforms.


1
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A
B
C
D
E
F
G
H
VF-129 BOARD
(CCD-TR618/TR618E/TR718E/TR728E
CCD-TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/
TRV78E/TRV88/TRV98/TRV98E)
B/W EVF
-REF.NO.:1000 SERIES-
XX MARK:NO MOUNT
NO MARK:REC/PB MODE
R :REC MODE
P :PB MODE
TO VC-251 BOARD(11/11) CN715
THROUGH THE FFC-256 FLAT CABLE
(SEE PAGE 4-64)
CN901 4P
EVF_4.75V
EVF_GND
BW_EVF_Y
XTALLY_LED
D901 PR1102W-TR (TALLY)
R903 1.8k 2012
C901 68u 6.3V TA C
Q904 2SD1819A-QRS-TX VIDEO DRIVE
Q903 2SA1163G-TE85L VIDEO AMP
Q902 2SD1615-T1GLGK H OUT
Q901 2SD1819A-QRS-TX 4.9V DETECTOR
R918 4700
L902 33uH ±5% 3225
C908 27p CH
R919 68k
R920 22k
R927 1k
R928 3300
R901 470
R904 10k
R902 470
C902 0.1u F 2012
R905 1200
R906 1500
C909 0.001u B 2012
C910 4700p SL
C911 6800p SL
C912 68u 6.3V TA C
L901 47uH 3225
SOL901
C903 0.47u 25V TA A
C904 1500p B
C905 33u 6.3V TA B
R911 27 3216
R910 15k
R909 10k
C913 0.47u 25V TA A
R907 100k
R908 390k
C906 1u F 3216
R912 1M
IC901
VIDEO AMP
IC901 BA7149F-E2
H DRIVE
H OSC
AFC
VIDEO AMP/MIX
SYNC SEP
V SYNC SEP
V OUT
V OSC
R915 22k
R929 1k
C907 0.1u
R916 XX ±0.5%
R917 68k ±0.5%
R914 XX
R913 XX
TH901 XX
R930 3.3
R931 1
RV903 470
R932 4700
V SIZE
T902 XX
T901 F.B.T
D903 MA111-(K8).SO DUMPER
L903 HLC
R921 6.8
HV
250V
2200V
W901 5P
G1
H
H
N.C.
G2
C916 0.001u 500V
R923 1M
RV904 470k
R924 2.7M
R925 2.7M
BRIGHT
C914 1.5u 35V TA A
R922 270k
R926 1k
-25V
C915 0.022u B 2012
V901
DEFLECTION YOKE
CN902 4P
DV1
DV2
DH1
DH2
PICTURE TUBE (MOIKXX90WB)
G1
G2
HV
16
4.6
-12.3
1.8
2.3
-11.7
4.4
0.4
1.6
2.3
4.3
2.0
2.1
4.6
2.0
1.6
2.1
1.3
2.0

Note :
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

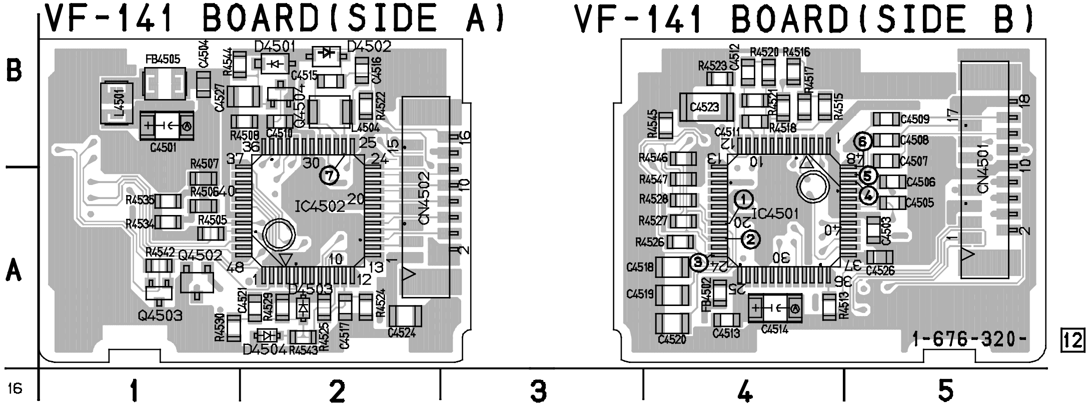
Note :
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

• SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC		➡	
PB		⇨	

VF-141 (COLOR EVF) PRINTED WIRING BOARD

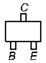
— Ref. No. VF-141 Board; 10,000 Series —

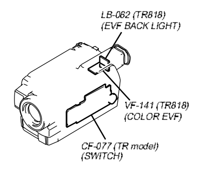

VF-141 BOARD(SIDE A)
VF-141 BOARD(SIDE B)
B
A
16
1
2
3
4
5
FB4505
L4501
C4501
C4504
R4544
D4501
D4502
C4515
C4516
C4527
Q4504
R4522
R4508
C4510
L4504
R4507
R4506
R4535
R4534
R4505
IC4502
CN4502
R4542
Q4502
Q4503
C4521
R4529
D4503
R4524
R4530
D4504
R4543
R4525
C4517
C4524
R4523
C4512
R4520
R4516
R4517
C4523
R4521
R4515
R4545
C4511
R4518
C4509
C4508
C4507
C4506
C4505
CN4501
R4546
R4547
R4528
R4527
R4526
IC4501
C4503
C4518
C4526
C4519
FB4502
C4514
R4513
C4520
C4513
1-676-320-
12

For printed wiring board

- Refer to page 4-71 for parts location.
- VF-141 board consists of multiple layers. However, only the sides (layers) A and B are shown.
- Chip parts

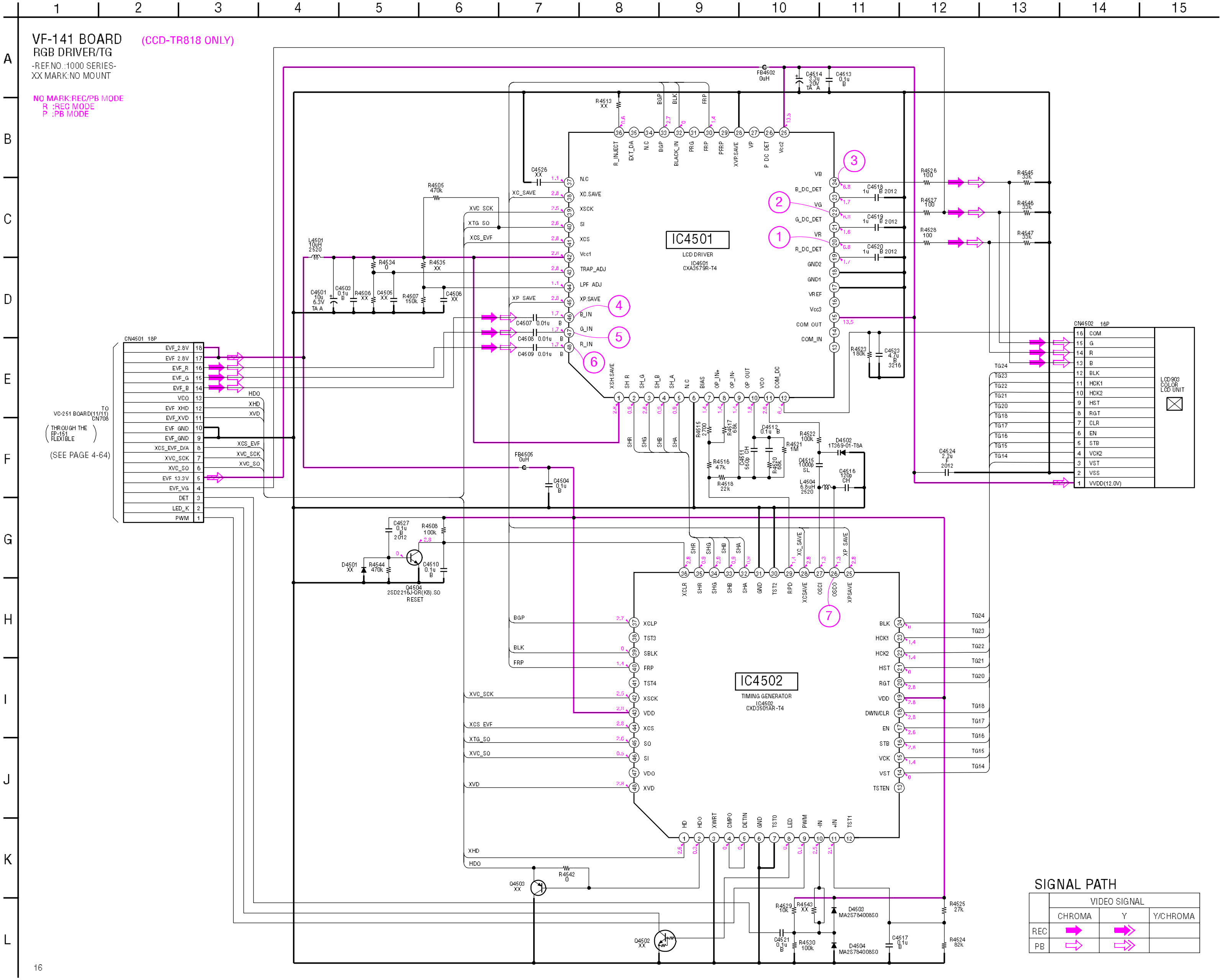
Transistor




LB-062 (TR818)
(EVF BACK LIGHT)
VF-141 (TR818)
(COLOR EVF)
CF-077 (TR model)
(SWITCH)

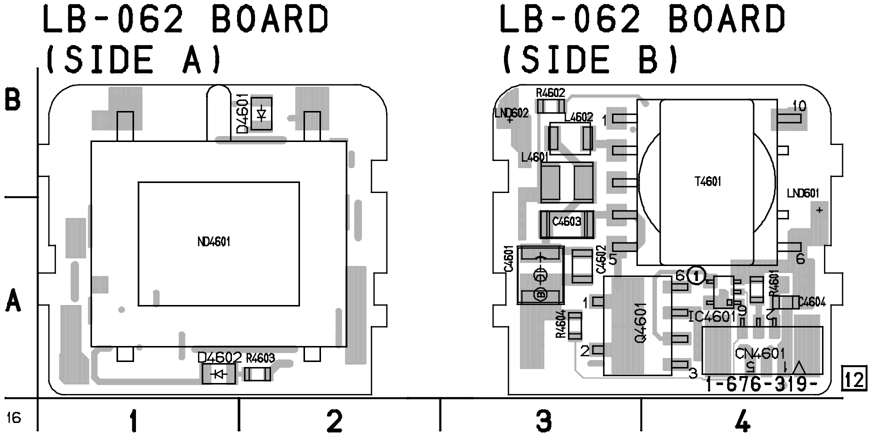
There are a few cases that the part printed on this diagram isn't mounted in this model.

For Schematic Diagram
- Refer to page 4-27 for printed wiring board.
- Refer to page 4-67 for waveforms.


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
A
B
C
D
E
F
G
H
I
J
K
L
VF-141 BOARD
RGB DRIVER/TG
(CCD-TR818 ONLY)
-REF.NO.:1000 SERIES-
XX MARK:NO MOUNT
NO MARK:REC/PB MODE
R :REC MODE
P :PB MODE
IC4501
LCD DRIVER
IC4501
CXA3579R-T4
IC4502
TIMING GENERATOR
IC4502
CXD3501AR-T4
CN4501 18P
EVF_2.8V
EVF 2.8V
EVF_R
EVF_G
EVF_B
VCO
EVF XHD
EVF_XVD
EVF GND
EVF_GND
XCS_EVF_D/A
XVC_SCK
XVC_SO
EVF 13.3V
EVF_VG
DET
LED_K
PWM
TO
VC-251 BOARD(11/11)
CN706
THROUGH THE
FP-151
FLEXIBLE
(SEE PAGE 4-64)
CN4502 16P
COM
G
R
B
BLK
HCK1
HCK2
HST
RGT
CLR
EN
STB
VCK2
VST
VSS
VVDD(12.0V)
LCD903
COLOR
LCD UNIT
Q4504
2SD2216J-QR(K8).SO
RESET
D4501
XX
Q4503
XX
Q4502
XX
D4502
1T369-01-T8A
D4503
MA2S784008SO
D4504
MA2S784008SO
FB4502
0uH
FB4505
0uH
L4501
10uH
L4504
6.8uH
①
②
③
④
⑤
⑥
⑦
16
SIGNAL PATH
VIDEO SIGNAL
CHROMA
Y
Y/CHROMA
REC
PB

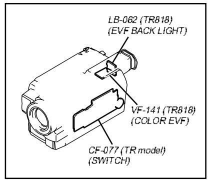
LB-062 (EVF BACK LIGHT) PRINTED WIRING BOARD

— Ref. No. LB-062 Board; 10,000 Series —

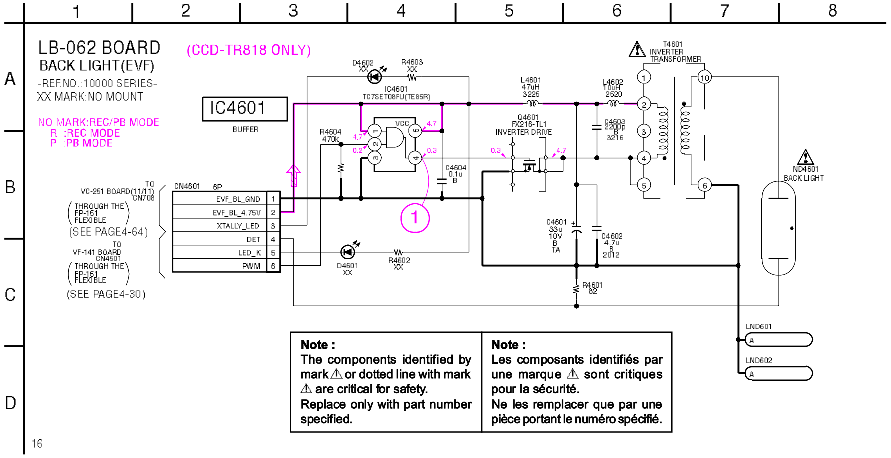

LB-062 BOARD
(SIDE A)
LB-062 BOARD
(SIDE B)
B
A
D4601
ND4601
D4602
R4603
R4602
LND602
L4602
L4601
C4603
C4601
C4602
T4601
LND601
10
1
5
6
R4601
C4604
R4604
Q4601
IC4601
2
3
CN4601
1-676-319-
12
16
1
2
3
4

For printed wiring board
- Refer to page 4-71 for parts location.
- LB-062 board consists of multiple layers. However, only the sides (layers) A and B are shown.

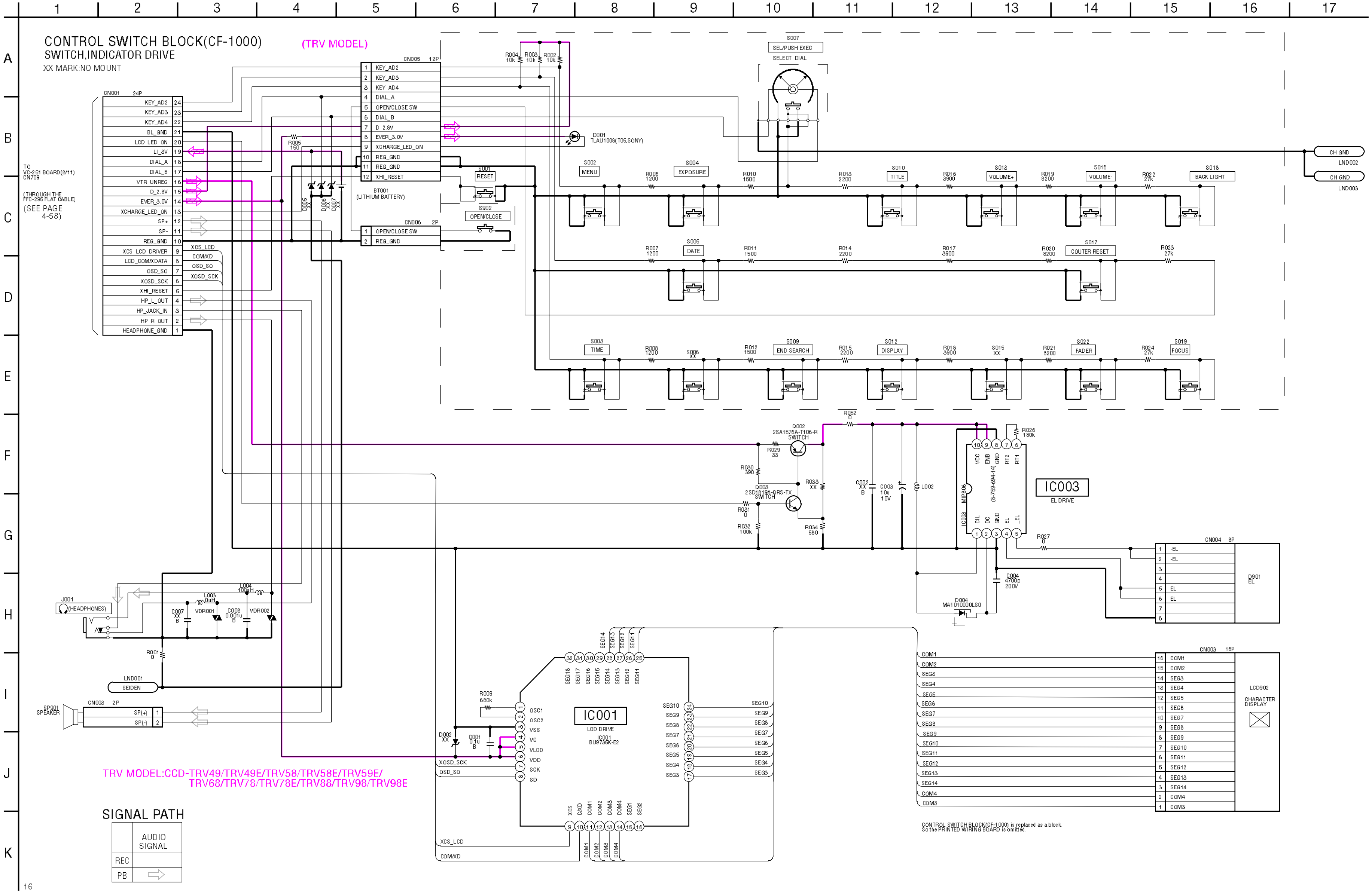
There are a few cases that the part printed on this diagram isn't mounted in this model.


LB-062 (TR818)
(EVF BACK LIGHT)
VF-141 (TR818)
(COLOR EVF)
CF-077 (TR model)
(SWITCH)

For Schematic Diagram
- Refer to page 4-67 for waveform.


1
2
3
4
5
6
7
8
A
B
C
D
LB-062 BOARD
BACK LIGHT(EVF)
-REF.NO.:10000 SERIES-
XX MARK:NO MOUNT
(CCD-TR818 ONLY)
NO MARK:REC/PB MODE
R :REC MODE
P :PB MODE
IC4601
BUFFER
D4602
XX
R4603
XX
IC4601
TC7SET08FU(TE85R)
VCC
R4604
470k
4.7
0.2
0.3
C4604
0.1u
B
TO
VC-251 BOARD(11/11)
CN708
THROUGH THE
FP-151
FLEXIBLE
(SEE PAGE4-64)
TO
VF-141 BOARD
CN4501
THROUGH THE
FP-151
FLEXIBLE
(SEE PAGE4-30)
CN4601 6P
EVF_BL_GND 1
EVF_BL_4.75V 2
XTALLY_LED 3
DET 4
LED_K 5
PWM 6
D4601
XX
R4602
XX
①
L4601
47uH
3225
L4602
10uH
2520
Q4601
FX216-TL1
INVERTER DRIVE
C4603
2200p
B
3216
T4601
INVERTER
TRANSFORMER
ND4601
BACK LIGHT
C4601
33u
10V
B
TA
C4602
4.7u
B
2012
R4601
82
LND601
LND602
A
16

Note :	Note :
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
A B C D E F G H I J K
CONTROL SWITCH BLOCK(CF-1000)
SWITCH,INDICATOR DRIVE
XX MARK:NO MOUNT
(TRV MODEL)
CN001 24P
KEY_AD2 24
KEY_AD3 23
KEY_AD4 22
BL_GND 21
LCD LED ON 20
LI_3V 19
DIAL_A 18
DIAL_B 17
VTR UNREG 16
D_2.8V 15
EVER_3.0V 14
XCHARGE_LED_ON 13
SP+ 12
SP- 11
REG_GND 10
XCS LCD DRIVER 9
LCD_COM/XDATA 8
OSD_SO 7
XOSD_SCK 6
XHI_RESET 5
HP_L_OUT 4
HP_JACK_IN 3
HP R OUT 2
HEADPHONE_GND 1
TO VC-251 BOARD(8/11) CN709
(THROUGH THE FFC-295 FLAT CABLE)
(SEE PAGE 4-58)
CN005 12P
KEY_AD2
KEY_AD3
KEY AD4
DIAL_A
OPEN/CLOSE SW
DIAL_B
D 2.8V
EVER_3.0V
XCHARGE_LED_ON
REG_GND
REG_GND
XHI_RESET
CN006 2P
OPEN/CLOSE SW
REG_GND
BT001 (LITHIUM BATTERY)
S001 RESET
S902 OPEN/CLOSE
D001 TLAU1008(T05,SONY)
R004 10k R003 10k R002 10k
R005 150
S007 SEL/PUSH EXEC SELECT DIAL
S002 MENU
S004 EXPOSURE
S010 TITLE
S013 VOLUME+
S016 VOLUME-
S018 BACK LIGHT
S005 DATE
S017 COUTER RESET
S003 TIME
S006 XX
S009 END SEARCH
S012 DISPLAY
S015 XX
S022 FADER
S019 FOCUS
CH GND LND002
CH GND LND003
Q002 2SA1576A-T106-R SWITCH
Q003 2SD1819A-QRS-TX SWITCH
IC003 EL DRIVE
CN004 8P
D901 EL
D004 MA111000QLS0
C004 4700p 200V
J001 (HEADPHONES)
LND001 SEIDEN
SP901 SPEAKER
CN003 2P SP(+) SP(-)
IC001 LCD DRIVE IC001 BU9735K-E2
CN003 16P
LCD902 CHARACTER DISPLAY
COM1 COM2 SEG3 SEG4 SEG5 SEG6 SEG7 SEG8 SEG9 SEG10 SEG11 SEG12 SEG13 SEG14 COM4 COM3
XCS_LCD
COM/XD
OSD_SO
XOSD_SCK

TRV MODEL:CCD-TRV49/TRV49E/TRV58/TRV58E/TRV59E/
TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E

SIGNAL PATH

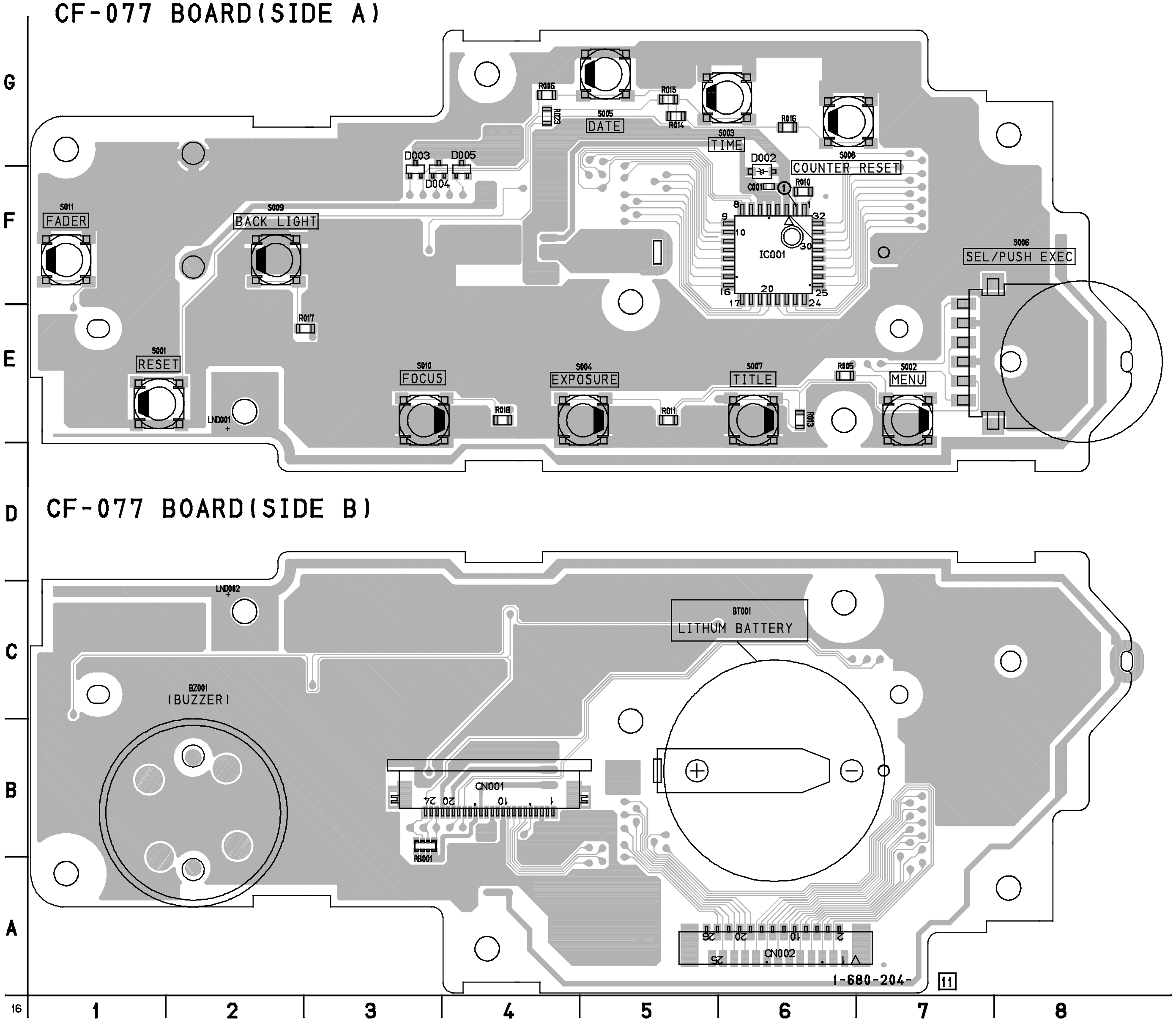
	AUDIO SIGNAL
REC	
PB	⇨

CONTROL SWITCH BLOCK(CF-1000) is replaced as a block.
So the PRINTED WIRING BOARD is omitted.

16

CF-077 (SWITCH) PRINTED WIRING BOARD

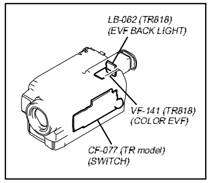
— Ref. No. CF-077 Board; 1,000 Series —


CF-077 BOARD(SIDE A)
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
16
S005
DATE
S003
TIME
S006
COUNTER RESET
R006
R023
R015
R014
R016
D002
C001
R010
D003
D004
D005
S011
FADER
S009
BACK LIGHT
IC001
S006
SEL/PUSH EXEC
R017
S001
RESET
LND001
S010
FOCUS
R018
S004
EXPOSURE
R011
S007
TITLE
R013
R005
S002
MENU
CF-077 BOARD(SIDE B)
LND002
BT001
LITHUM BATTERY
BZ001
(BUZZER)
CN001
RB001
CN002
1-680-204-
11

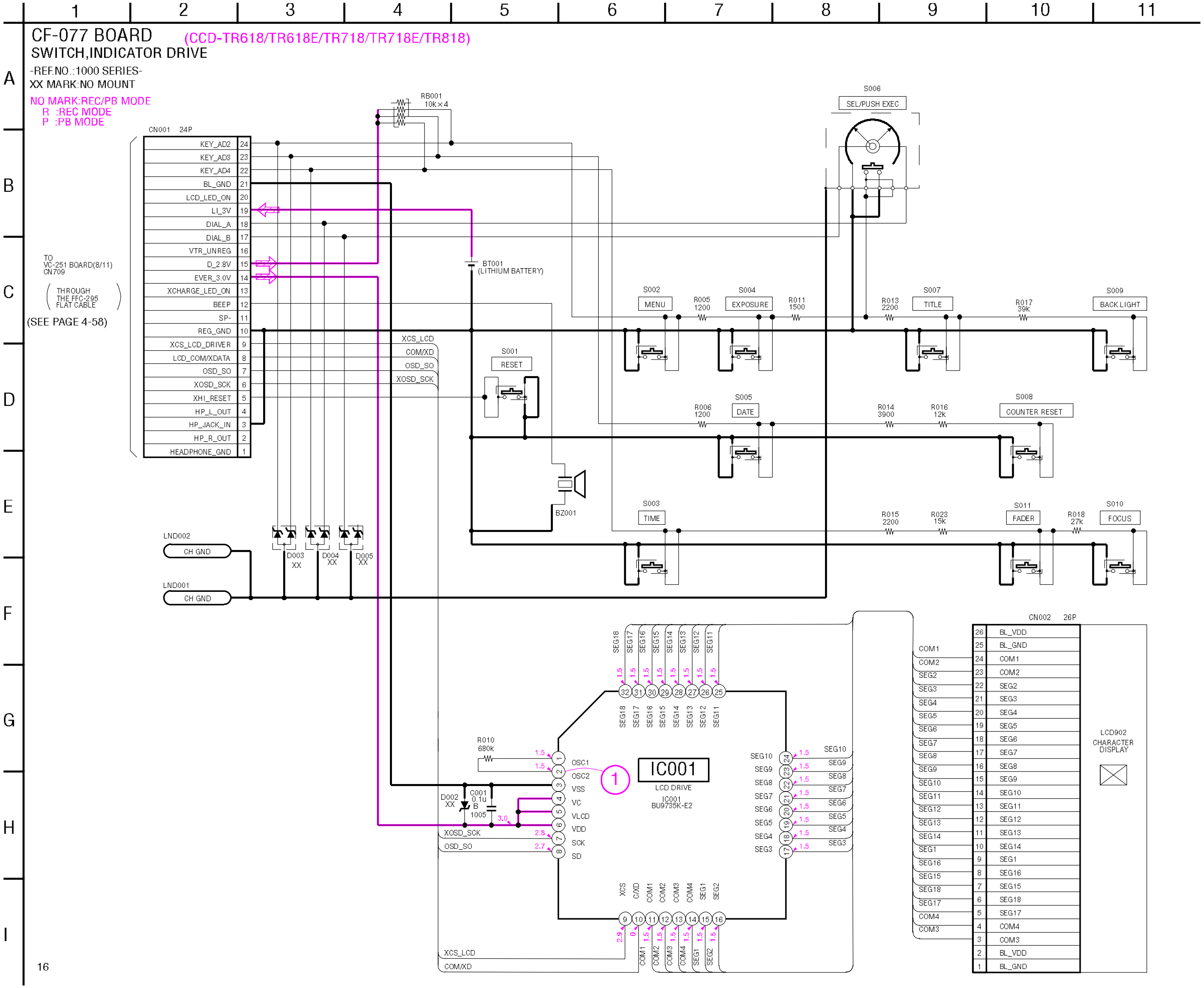
For printed wiring board

- Refer to page 4-71 for parts location.
- CF-077 board consists of multiple layers. However, only the sides (layers) A and B are shown.

There are a few cases that the part printed on this diagram isn't mounted in this model.

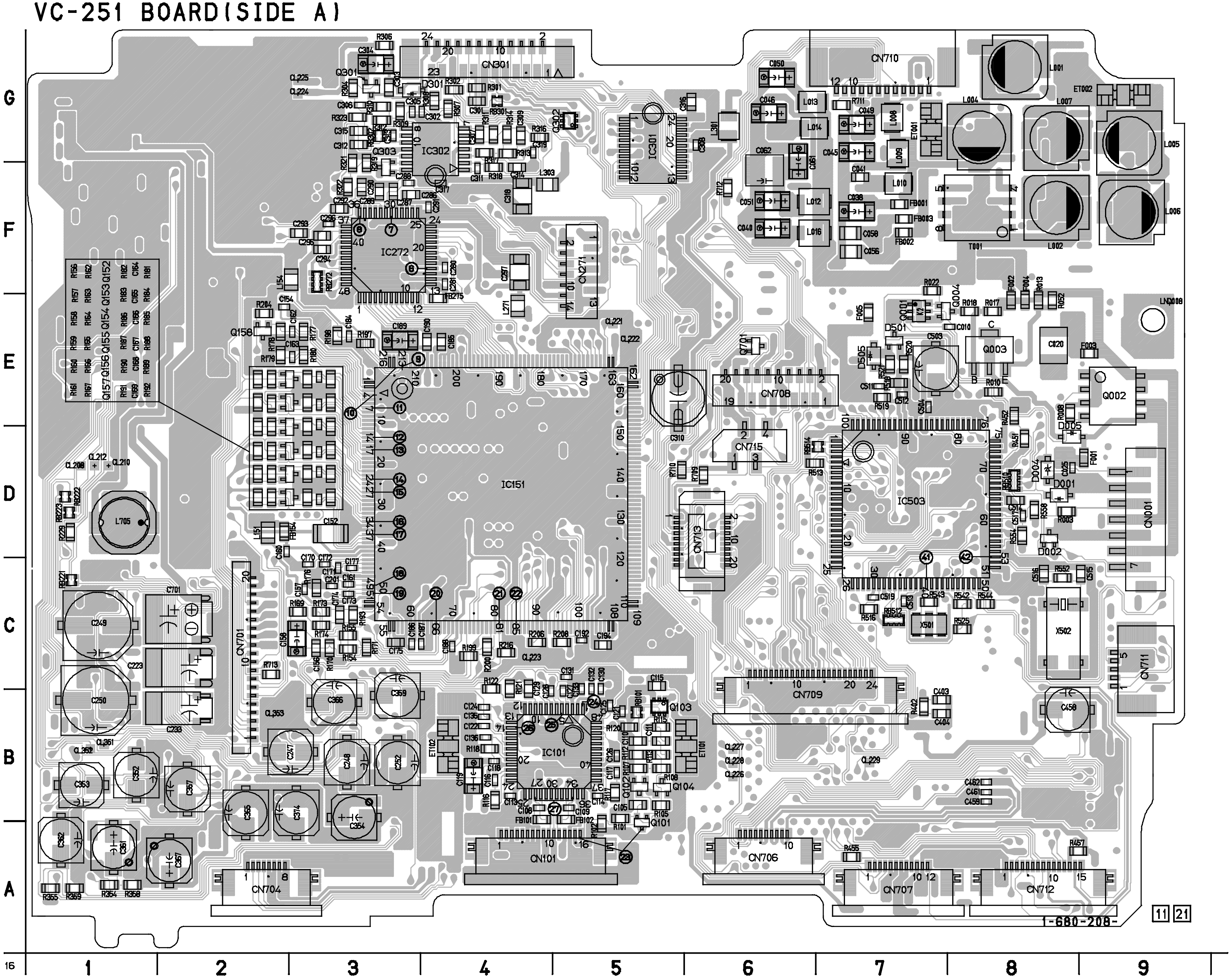

LB-062 (TR818)
(EVF BACK LIGHT)
VF-141 (TR818)
(COLOR EVF)
CF-077 (TR model)
(SWITCH)

For Schematic Diagram
• Refer to page 4-67 for waveform.

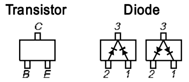

1
2
3
4
5
6
7
8
9
10
11
A
B
C
D
E
F
G
H
I
CF-077 BOARD
(CCD-TR618/TR618E/TR718/TR718E/TR818)
SWITCH,INDICATOR DRIVE
-REF.NO.:1000 SERIES-
XX MARK:NO MOUNT
NO MARK:REC/PB MODE
R :REC MODE
P :PB MODE
CN001 24P
KEY_AD2 24
KEY_AD3 23
KEY_AD4 22
BL_GND 21
LCD_LED_ON 20
LI_3V 19
DIAL_A 18
DIAL_B 17
VTR_UNREG 16
D_2.8V 15
EVER_3.0V 14
XCHARGE_LED_ON 13
BEEP 12
SP- 11
REG_GND 10
XCS_LCD_DRIVER 9
LCD_COM/XDATA 8
OSD_SO 7
XOSD_SCK 6
XHI_RESET 5
HP_L_OUT 4
HP_JACK_IN 3
HP_R_OUT 2
HEADPHONE_GND 1
TO VC-251 BOARD(8/11) CN709
(THROUGH THE FFC-295 FLAT CABLE)
(SEE PAGE 4-58)
RB001 10k×4
S006 SEL/PUSH EXEC
BT001 (LITHIUM BATTERY)
XCS_LCD
COM/XD
OSD_SO
XOSD_SCK
S001 RESET
S002 MENU
R005 1200
S004 EXPOSURE
R011 1500
R013 2200
S007 TITLE
R017 39k
S009 BACK LIGHT
R006 1200
S005 DATE
R014 3900
R016 12k
S008 COUNTER RESET
BZ001
S003 TIME
R015 2200
R023 15K
S011 FADER
R018 27k
S010 FOCUS
LND002 CH GND
LND001 CH GND
D003 XX
D004 XX
D005 XX
R010 680k
C001 0.1u B 1005
D002 XX
IC001 LCD DRIVE
IC001 BU9735K-E2
①
OSC1 OSC2 VSS VC VLCD VDD SCK SD
XOSD_SCK
OSD_SO
XCS_LCD
COM/XD
SEG18 SEG17 SEG16 SEG15 SEG14 SEG13 SEG12 SEG11
SEG10 SEG9 SEG8 SEG7 SEG6 SEG5 SEG4 SEG3
XCS C/XD COM1 COM2 COM3 COM4 SEG1 SEG2
1.5
2.8
2.7
3.0
2.9
0
CN002 26P
26 BL_VDD
25 BL_GND
24 COM1
23 COM2
22 SEG2
21 SEG3
20 SEG4
19 SEG5
18 SEG6
17 SEG7
16 SEG8
15 SEG9
14 SEG10
13 SEG11
12 SEG12
11 SEG13
10 SEG14
9 SEG1
8 SEG16
7 SEG15
6 SEG18
5 SEG17
4 COM4
3 COM3
2 BL_VDD
1 BL_GND
LCD902 CHARACTER DISPLAY
16

VC-251 (CAMERA PROCESSOR, Y/C PROCESSOR, FOCUS/ZOOM MOTOR DRIVE, REC/PB AMP, LINE I/O AMP, SERVO, MODE CONTROL, HI CONTROL, AUDIO, DC/DC CONVERTER, CONNECTOR) PRINTED WIRING BOARD

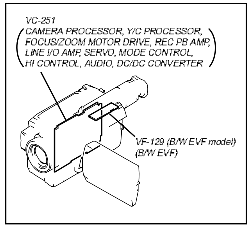
— Ref. No. VC-251 Board; 10,000 Series —


VC-251 BOARD(SIDE A)
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
15
CN301
IC302
IC301
CN710
L001
L004
L007
L005
L006
T001
L002
IC272
CN271
IC151
CN708
CN715
CN713
IC503
CN001
Q002
Q003
CN701
C249
C250
L705
CN709
CN711
IC101
CN101
CN704
CN706
CN707
CN712
X501
X502
1-680-208-
11 21

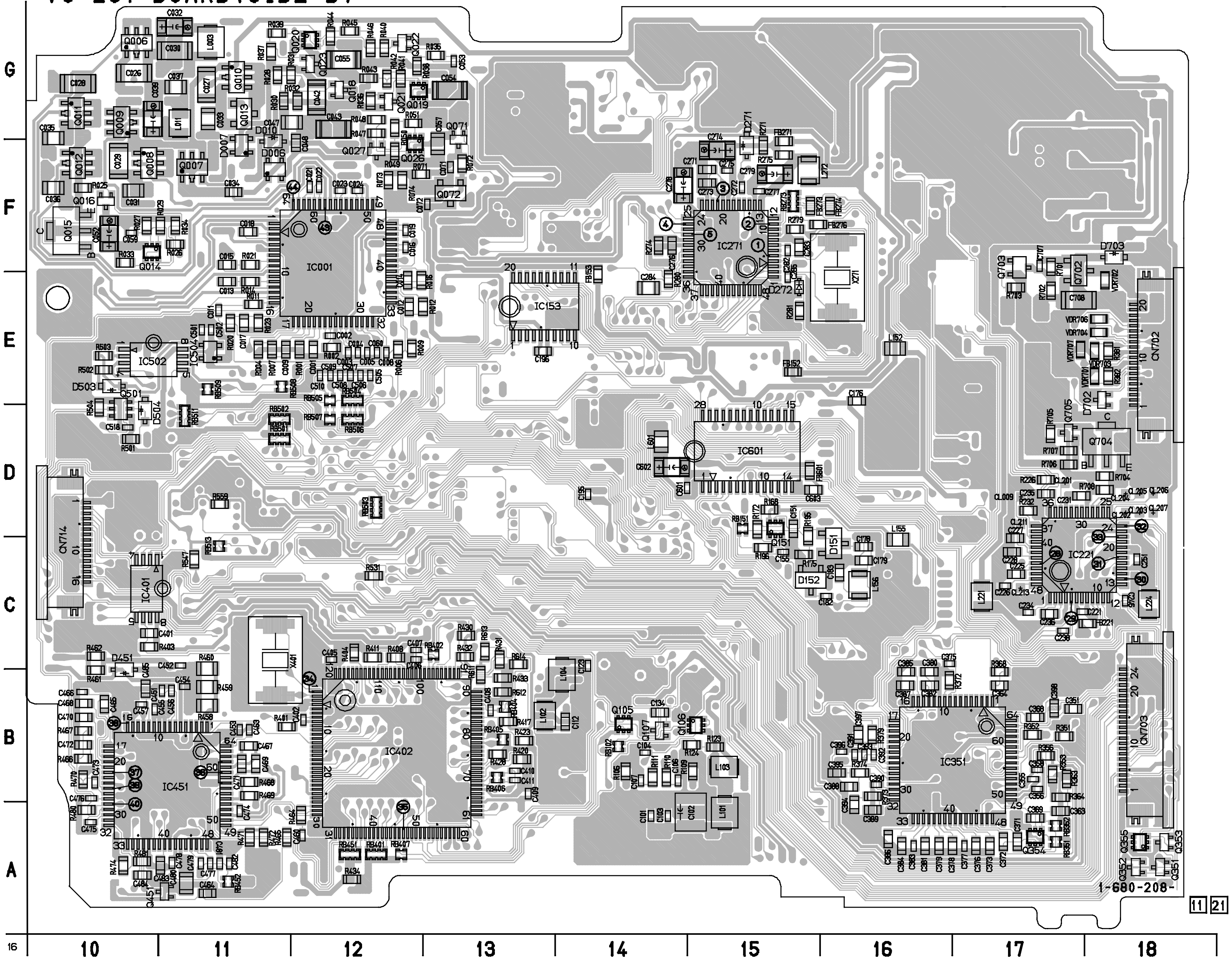
For printed wiring board
- Refer to pages 4-72,4-73 for parts location.
- VC-251 board consists of multiple layers. However, only the sides (layers) A and B are shown.
- Chip parts


Transistor
Diode
C
B
E
3
3
2
1
2
1

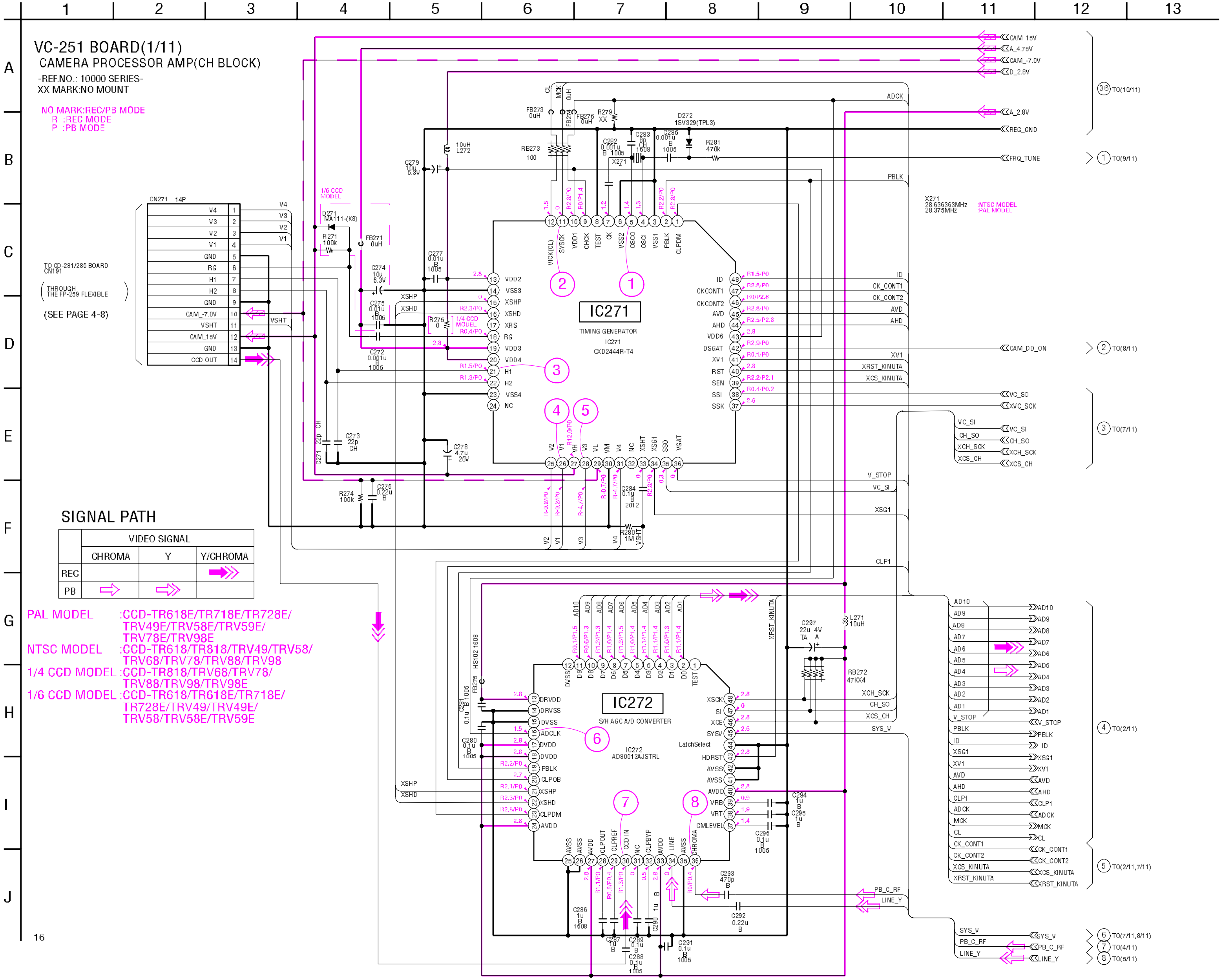
There are a few cases that the part printed on this diagram isn't mounted in this model.


VC-251
CAMERA PROCESSOR, Y/C PROCESSOR, FOCUS/ZOOM MOTOR DRIVE, REC PB AMP, LINE I/O AMP, SERVO, MODE CONTROL, HI CONTROL, AUDIO, DC/DC CONVERTER
VF-129 (B/W EVF model) (B/W EVF)

VC-251 BOARD(SIDE B)


G
F
E
D
C
B
A
16
10
11
12
13
14
15
16
17
18
IC001
IC153
IC271
IC502
IC504
IC601
IC221
IC401
IC402
IC451
IC351
CN702
CN703
CN714
X271
X401
Q015
Q072
Q704
D151
D152
D503
D504
L101
L102
L103
L104
1-680-208-
11
21

For Schematic Diagram
- Refer to page 4-39 for printed wiring board.
- Refer to page 4-68 for waveforms.


1
2
3
4
5
6
7
8
9
10
11
12
13
A
B
C
D
E
F
G
H
I
J
CN271 14P
V4
V3
V2
V1
GND
RG
H1
H2
GND
CAM_-7.0V
VSHT
CAM_15V
GND
CCD OUT
TO CD-281/285 BOARD CN191
(THROUGH THE FP-259 FLEXIBLE)
(SEE PAGE 4-8)
1/6 CCD MODEL
1/4 CCD MODEL
D271 MA111-(K8)
R271 100k
FB271 0uH
C274 10u 6.3V
C275 0.01u B 1005
C272 0.001u B 1005
C273 22p CH
C271 22p CH
C278 4.7u 20V
R274 100k
C276 0.22u B
C277 0.01u B 1005
C279 10u 6.3V
10uH L272
FB273 0uH
FB274 0uH
FB275 0uH
R279 XX
RB273 100
C282 0.001u B 1005
C283 8p CH 1608
C285 0.001u B 1005
X271
D272 1SV329(TPL3)
R281 470k
R275 0
IC271
TIMING GENERATOR
IC271
CXD2444R-T4
VDD2
VSS3
XSHP
XSHD
XRS
RG
VDD3
VDD4
H1
H2
VSS4
NC
VCK(CL)
SYSCK
VDD1
CHCK
TEST
CK
VSS2
OSCO
OSCI
VSS1
PBLK
CLPDM
ID
CKCONT1
CKCONT2
AVD
AHD
VDD5
DSGAT
XV1
RST
SEN
SSI
SSK
V2
V1
VH
V3
VL
VM
V4
NC
XSHT
XSG1
SSO
VGAT
C284 0.1u B 2012
R280 1M
X271 28.636363MHz :NTSC MODEL
28.375MHz :PAL MODEL
CAM 15V
A_4.75V
CAM_-7.0V
D_2.8V
A_2.8V
REG_GND
FRQ_TUNE
ADCK
PBLK
CK_CONT1
CK_CONT2
CAM_DD_ON
XRST_KINUTA
XCS_KINUTA
VC_SO
XVC_SCK
VC_SI
CH_SO
XCH_SCK
XCS_CH
V_STOP
XSG1
CLP1
36 TO(10/11)
1 TO(9/11)
2 TO(8/11)
3 TO(7/11)
4 TO(2/11)
5 TO(2/11,7/11)
6 TO(7/11,8/11)
7 TO(4/11)
8 TO(5/11)
IC272
S/H AGC A/D CONVERTER
IC272
AD80013AJSTRL
DRVDD
DRVSS
DVSS
ADCLK
DVDD
PBLK
CLPOB
XSHP
XSHD
CLPDM
AVDD
XSCK
SI
XCE
SYSV
LatchSelect
HDRST
AVSS
VRB
VRT
CMLEVEL
CLPOUT
CLPREF
CCD IN
CLPBYP
LINE
CHROMA
TEST
XRST_KINUTA
FB276 HS102 1608
C281 0.1u B 1005
C280 0.1u B 1005
C297 22u 4V TA A
L271 10uH
RB272 47KX4
C294 1u B
C295 1u B
C296 0.1u B 1005
C293 470p B
C292 0.22u B
C286 1u B 1608
C287 1u B
C289 0.1u B
C288 0.1u B 1005
C290 1u B
C291 0.1u B 1005
AD10
AD9
AD8
AD7
AD6
AD5
AD4
AD3
AD2
AD1
ID
XV1
AVD
AHD
MCK
CL
SYS_V
PB_C_RF
LINE_Y
16

VC-251 BOARD(1/11)
CAMERA PROCESSOR AMP(CH BLOCK)
-REF.NO.: 10000 SERIES-
XX MARK:NO MOUNT

NO MARK:REC/PB MODE
R :REC MODE
P :PB MODE

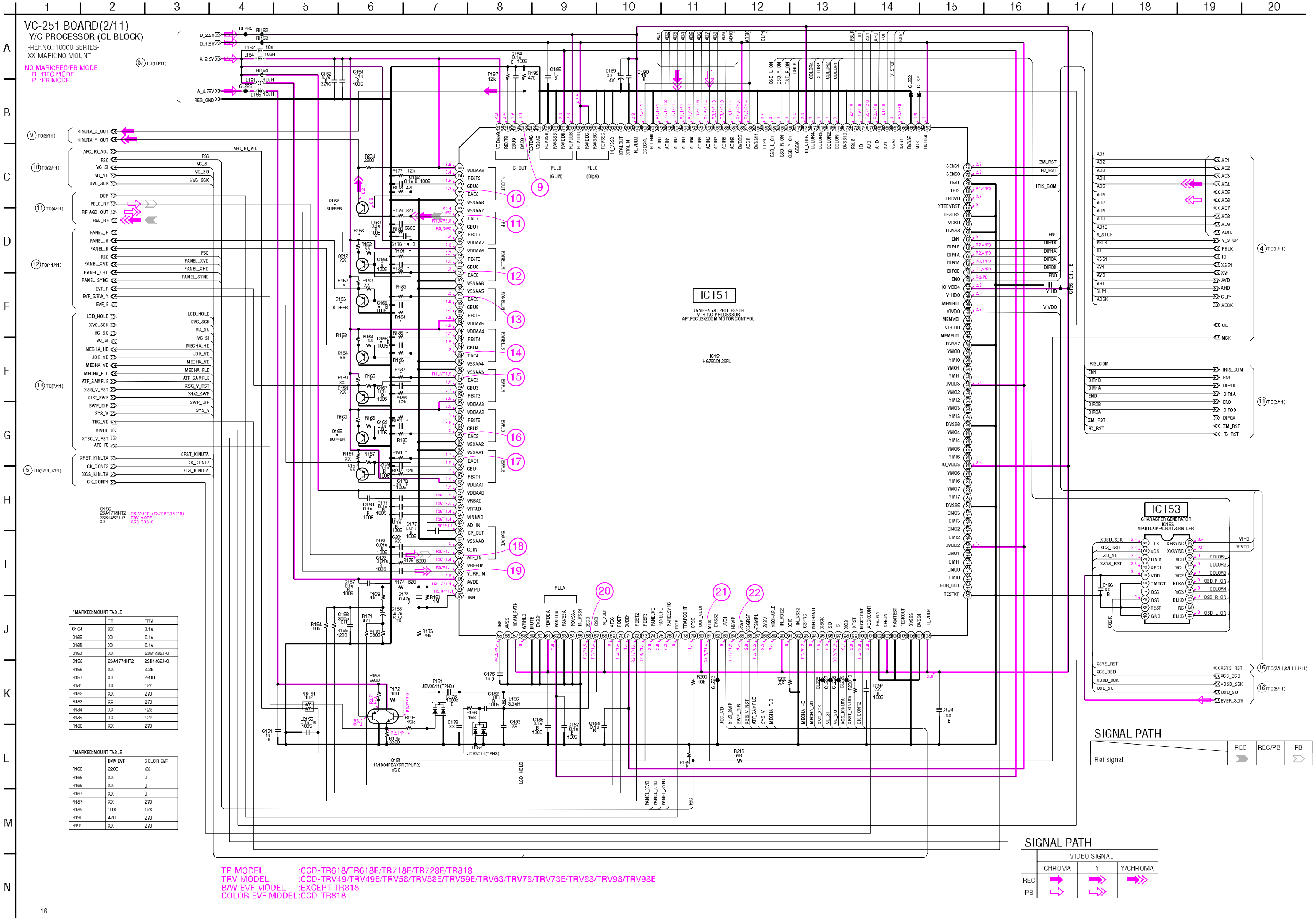
SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC			➡➡
PB	⇨	⇨⇨	

PAL MODEL :CCD-TR618E/TR718E/TR728E/TRV49E/TRV58E/TRV59E/TRV78E/TRV98E
NTSC MODEL :CCD-TR618/TR818/TRV49/TRV58/TRV68/TRV78/TRV88/TRV98
1/4 CCD MODEL :CCD-TR818/TRV68/TRV78/TRV88/TRV98/TRV98E
1/6 CCD MODEL :CCD-TR618/TR618E/TR718E/TR728E/TRV49/TRV49E/TRV58/TRV58E/TRV59E

For Schematic Diagram

- Refer to page 4-39 for printed wiring board.
- Refer to page 4-68 for waveforms.


VC-251 BOARD(2/11)
Y/C PROCESSOR (CL BLOCK)
-REF.NO.:10000 SERIES-
XX MARK:NO MOUNT
NO MARK:REC/PB MODE
R :REC MODE
P :PB MODE
IC151
CAMERA Y/C PROCESSOR
VTR Y/C PROCESSOR
AFT,FOCUS/ZOOM MOTOR CONTROL
IC151 HG76C012SFL
IC153
CHARACTER GENERATOR
IC153 MB90099PFV-G-108-BND-ER
Q151 HN1B04FE-Y/GR(TPLR3) VCO
D151 JDV3C11(TPH3)
D152 JDV3C11(TPH3)
Q156 2SA1774HT2 2SB1462J-Q XX
TR MODEL (EXCEPT TR618) TRV MODEL CCD-TR618
Q158 BUFFER
Q153 BUFFER
Q156 BUFFER
PLLA
PLLB (GUM)
PLLC (Dig8)
TO(10/11)
TO(5/11)
TO(2/11)
TO(4/11)
TO(11/11)
TO(7/11)
TO(1/11,7/11)
TO(1/11)
TO(3/11)
TO(7/11,8/11,11/11)
TO(8/11)
KINUTA_C_OUT
KINUTA_Y_OUT
EVER_3.0V
16

*MARKED:MOUNT TABLE

	TR	TRV
C164	XX	0.1u
C165	XX	0.1u
C166	XX	0.1u
Q153	XX	2SB1462J-Q
Q158	2SA1774HT2	2SB1462J-Q
R156	XX	2.2k
R157	XX	2200
R181	XX	12k
R182	XX	270
R183	XX	270
R184	XX	12k
R185	XX	12k
R186	XX	270

*MARKED:MOUNT TABLE

	B/W EVF	COLOR EVF
R160	2200	XX
R165	XX	0
R166	XX	0
R167	XX	0
R187	XX	270
R189	10K	12K
R190	470	270
R191	XX	270

TR MODEL :CCD-TR618/TR618E/TR718E/TR728E/TR818
TRV MODEL :CCD-TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E
B/W EVF MODEL :EXCEPT TR818
COLOR EVF MODEL:CCD-TR818

SIGNAL PATH

	REC	REC/PB	PB
Ref.signal	➡		⇨

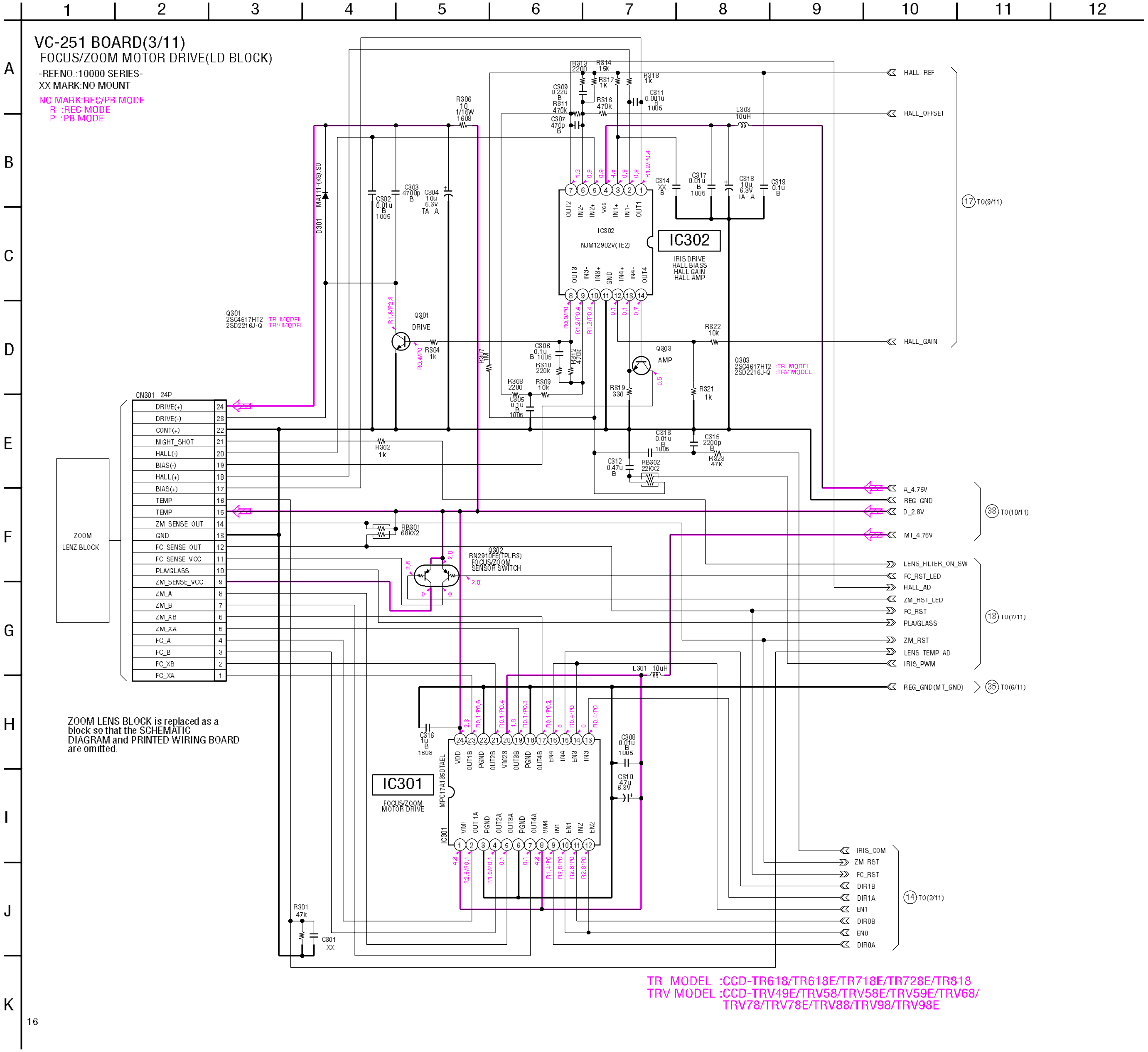
SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡	➡	➡
PB	⇨	⇨	

Y/C PROCESSOR
VC-251 (2/11)

For Schematic Diagram

- Refer to page 4-39 for printed wiring board.

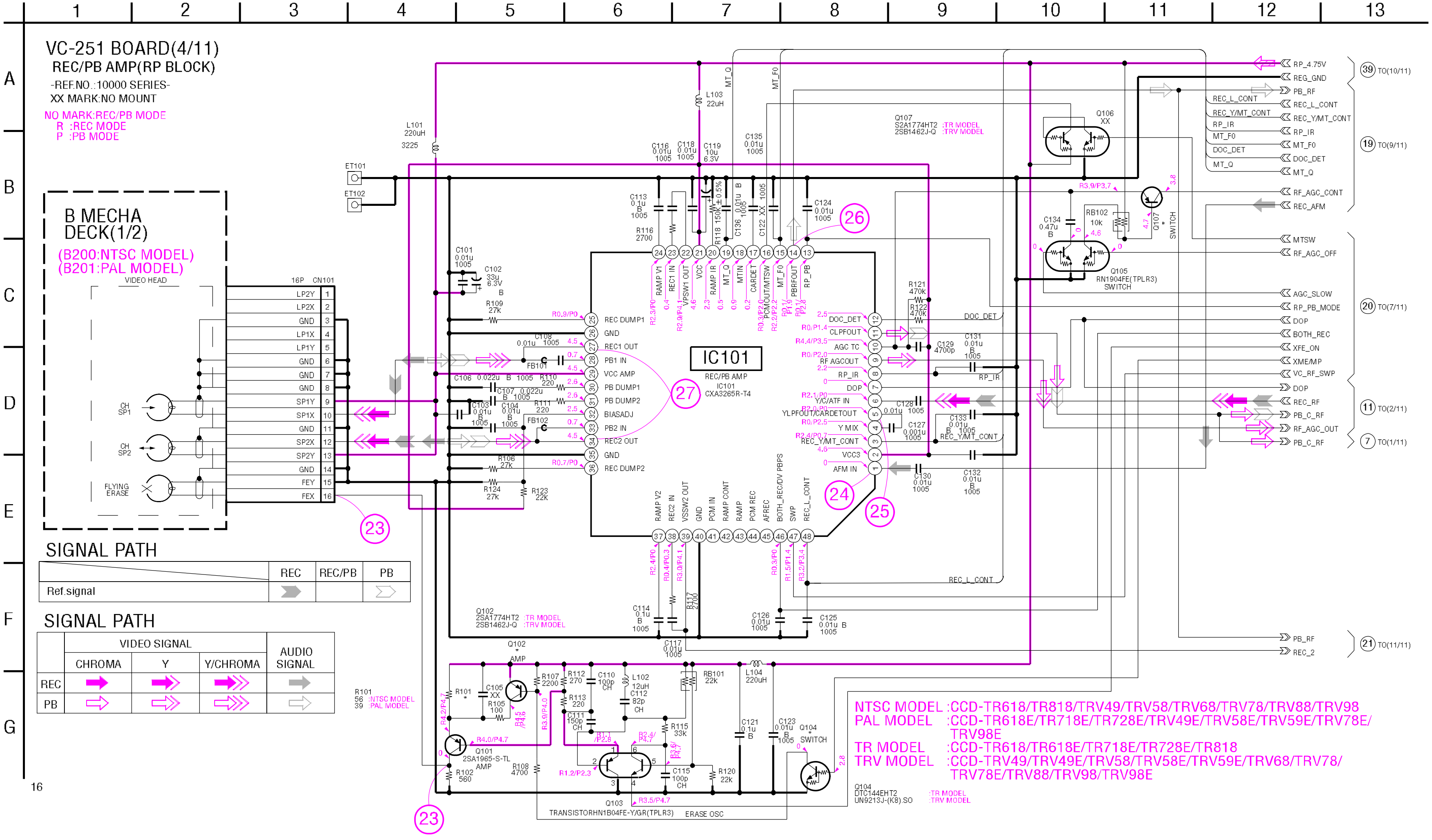

1
2
3
4
5
6
7
8
9
10
11
12
A
B
C
D
E
F
G
H
I
J
K
VC-251 BOARD(3/11)
FOCUS/ZOOM MOTOR DRIVE(LD BLOCK)
-REF.NO.:10000 SERIES-
XX MARK:NO MOUNT
NO MARK:REC/PB MODE
R :REC MODE
P :PB MODE
R306 10 1/16W 1608
D301 MA111-(K8).S0
C302 0.01u B 1005
C303 4700p B
C304 10u 6.3V TA A
Q301 2SC4617HT2 :TR MODEL 2SD2216J-Q :TRV MODEL
Q301 DRIVE
R1.8/P2.8
R0.4/P0
R304 1k
R307 1M
R313 2200
R314 15k
R317 1k
R318 1k
C309 0.22u B
R311 470k
R316 470k
C311 0.001u B 1005
C307 470p B
L303 10uH
1.3
0.9
0.9
4.6
0.9
0.9
R1.2/P0.4
OUT2
IN2-
IN2+
Vcc
IN1+
IN1-
OUT1
IC302
NJM12902V(TE2)
OUT3
IN3-
IN3+
GND
IN4+
IN4-
OUT4
C314 XX B
C317 0.01u B 1005
C318 10u 6.3V TA A
C319 0.1u B
IC302
IRIS DRIVE
HALL BIASS
HALL GAIN
HALL AMP
R0.9/P0
R1.2/P0.4
R1.2/P0.4
0.1
0.1
0.7
R322 10k
C306 0.1u B 1005
R312 470k
R310 220k
R308 2200
R309 10k
C305 0.1u B 1005
Q303 AMP
0.5
R319 330
R321 1k
Q303 2SC4617HT2 :TR MODEL 2SD2216J-Q :TRV MODEL
C313 0.01u B 1005
C315 2200p B
R323 47k
C312 0.47u B
RB302 22kX2
HALL REF
HALL_OFFSET
HALL_GAIN
17 TO(9/11)
CN301 24P
DRIVE(+) 24
DRIVE(-) 23
CONT(+) 22
NIGHT_SHOT 21
HALL(-) 20
BIAS(-) 19
HALL(+) 18
BIAS(+) 17
TEMP 16
TEMP 15
ZM SENSE OUT 14
GND 13
FC SENSE OUT 12
FC SENSE VCC 11
PLA/GLASS 10
ZM_SENSE_VCC 9
ZM_A 8
ZM_B 7
ZM_XB 6
ZM_XA 5
FC_A 4
FC_B 3
FC_XB 2
FC_XA 1
ZOOM LENZ BLOCK
R302 1k
RB301 68kX2
Q302 RN2910FE(TPLR3) FOCUS/ZOOM SENSOR SWITCH
2.8
2.8
2.8
0
0
A_4.75V
REG GND
D_2.8V
MT_4.75V
38 TO(10/11)
LENS_FILTER_ON_SW
FC_RST_LED
HALL_AD
ZM_RST_LED
FC_RST
PLA/GLASS
ZM_RST
LENS TEMP AD
IRIS_PWM
18 TO(7/11)
L301 10uH
REG_GND(MT_GND)
35 TO(6/11)
C316 1u B 1608
2.8
R0.1/P0.6
R0.1/P0.4
4.8
R0.1/P0.3
R0.1/P0.2
0
R0.4/P0
0
R0.4/P0
VDD
OUT1B
PGND
OUT2B
VM23
OUT3B
PGND
OUT4B
EN4
IN4
EN3
IN3
IC301
FOCUS/ZOOM MOTOR DRIVE
MPC17A135DTAEL
IC301
VM1
OUT 1A
PGND
OUT2A
OUT3A
PGND
OUT4A
VM4
IN1
EN1
IN2
EN2
4.8
R2.6/P0.1
R1.0/P0.1
0.1
0.1
4.8
R1.4/P0
R2.8/P0
R2.8/P0
R2.8/P0
C308 0.01u B 1005
C310 47u 6.3V
R301 47k
C301 XX
IRIS_COM
ZM RST
FC_RST
DIR1B
DIR1A
EN1
DIR0B
EN0
DIR0A
14 TO(2/11)
16

ZOOM LENS BLOCK is replaced as a block so that the SCHEMATIC DIAGRAM and PRINTED WIRING BOARD are omitted.

TR MODEL :CCD-TR618/TR618E/TR718E/TR728E/TR818
TRV MODEL :CCD-TRV49E/TRV58/TRV58E/TRV59E/TRV68/
TRV78/TRV78E/TRV88/TRV98/TRV98E

FOCUS/ZOOM MOTOR DRIVE
VC-251 (3/11)

For Schematic Diagram
- Refer to page 4-39 for printed wiring board.
- Refer to page 4-68 for waveforms.


VC-251 BOARD(4/11)
REC/PB AMP(RP BLOCK)
-REF.NO.:10000 SERIES-
XX MARK:NO MOUNT
NO MARK:REC/PB MODE
R :REC MODE
P :PB MODE
B MECHA DECK(1/2)
(B200:NTSC MODEL)
(B201:PAL MODEL)
VIDEO HEAD
FLYING ERASE
16P CN101
LP2Y
LP2X
GND
LP1X
LP1Y
SP1Y
SP1X
SP2X
SP2Y
FEY
FEX
IC101
REC/PB AMP
IC101 CXA3265R-T4
REC DUMP1
REC1 OUT
PB1 IN
VCC AMP
PB DUMP1
PB DUMP2
BIASADJ
PB2 IN
REC2 OUT
REC DUMP2
DOC_DET
CLPFOUT
AGC TC
RF AGCOUT
RP_IR
DOP
Y/C/ATF IN
YLPFOUT/CARDETOUT
Y MIX
REC_Y/MT_CONT
VCC3
AFM IN
Q101 2SA1965-S-TL AMP
Q102 2SA1774HT2 :TR MODEL 2SB1462J-Q :TRV MODEL
Q103 TRANSISTORHN1B04FE-Y/GR(TPLR3) ERASE OSC
Q104 DTC144EHT2 :TR MODEL UN9213J-(K8).SO :TRV MODEL SWITCH
Q105 RN1904FE(TPLR3) SWITCH
Q106 XX
Q107 2SA1774HT2 :TR MODEL 2SB1462J-Q :TRV MODEL
RP_4.75V
REG_GND
PB_RF
REC_L_CONT
REC_Y/MT_CONT
RP_IR
MT_F0
DOC_DET
MT_Q
RF_AGC_CONT
REC_AFM
MTSW
RF_AGC_OFF
AGC_SLOW
RP_PB_MODE
DOP
BOTH_REC
XFE_ON
XME/MP
VC_RF_SWP
REC_RF
PB_C_RF
RF_AGC_OUT
REC_2
(39) TO(10/11)
(19) TO(9/11)
(20) TO(7/11)
(11) TO(2/11)
(7) TO(1/11)
(21) TO(11/11)
ET101
ET102

SIGNAL PATH

	REC	REC/PB	PB
Ref.signal	➡		⇨

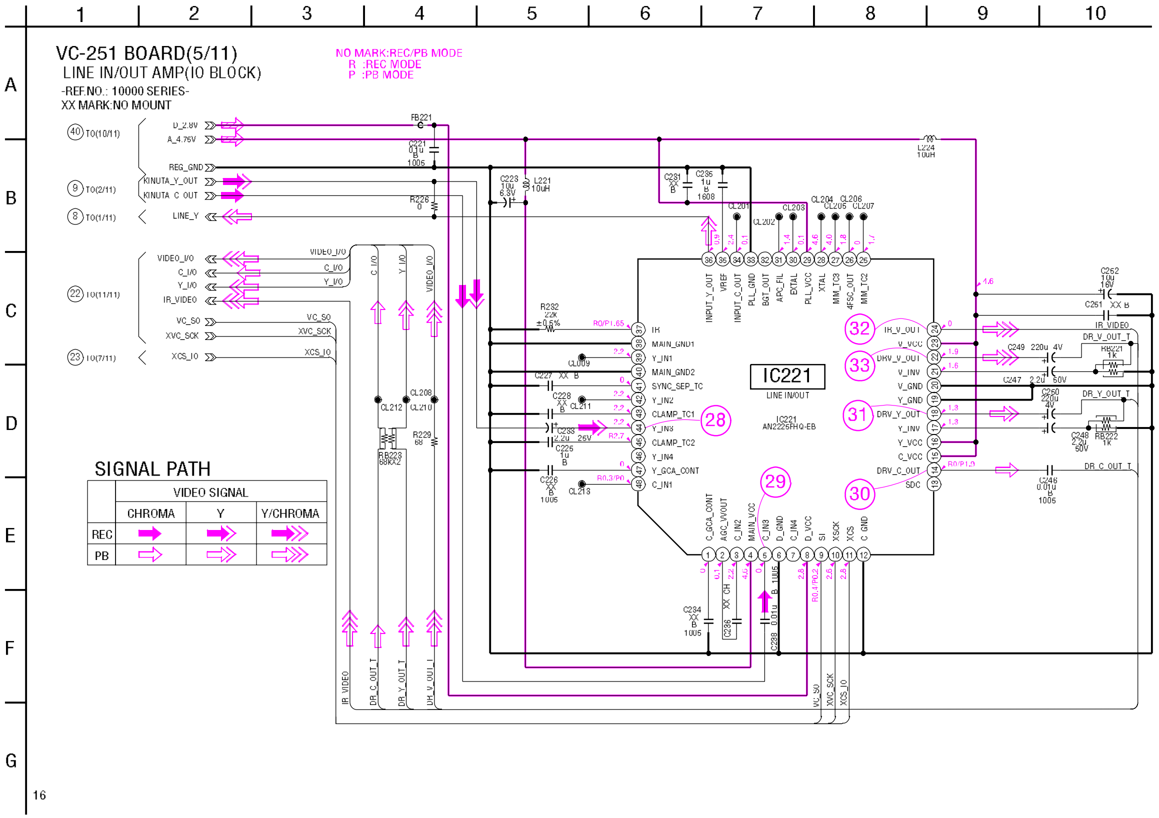
SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡➡	➡➡➡	➡
PB	⇨	⇨⇨	⇨⇨⇨	⇨

NTSC MODEL :CCD-TR618/TR818/TRV49/TRV58/TRV68/TRV78/TRV88/TRV98
PAL MODEL :CCD-TR618E/TR718E/TR728E/TRV49E/TRV58E/TRV59E/TRV78E/TRV98E
TR MODEL :CCD-TR618/TR618E/TR718E/TR728E/TR818
TRV MODEL :CCD-TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E

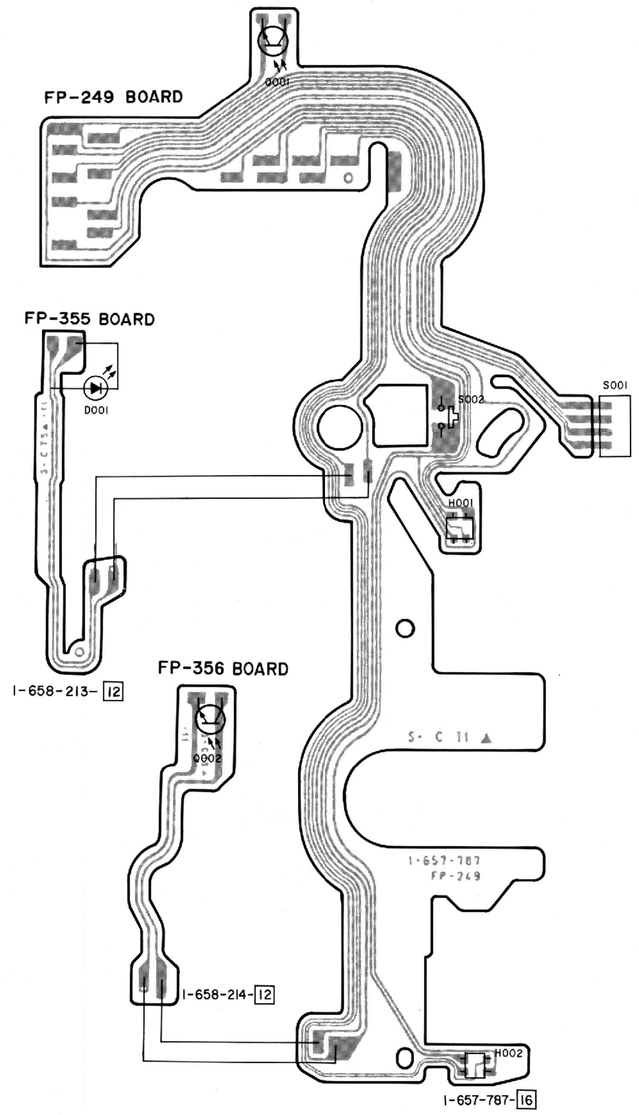
For Schematic Diagram

- Refer to page 4-39 for printed wiring board.
- Refer to pages 4-68,69 for waveforms.

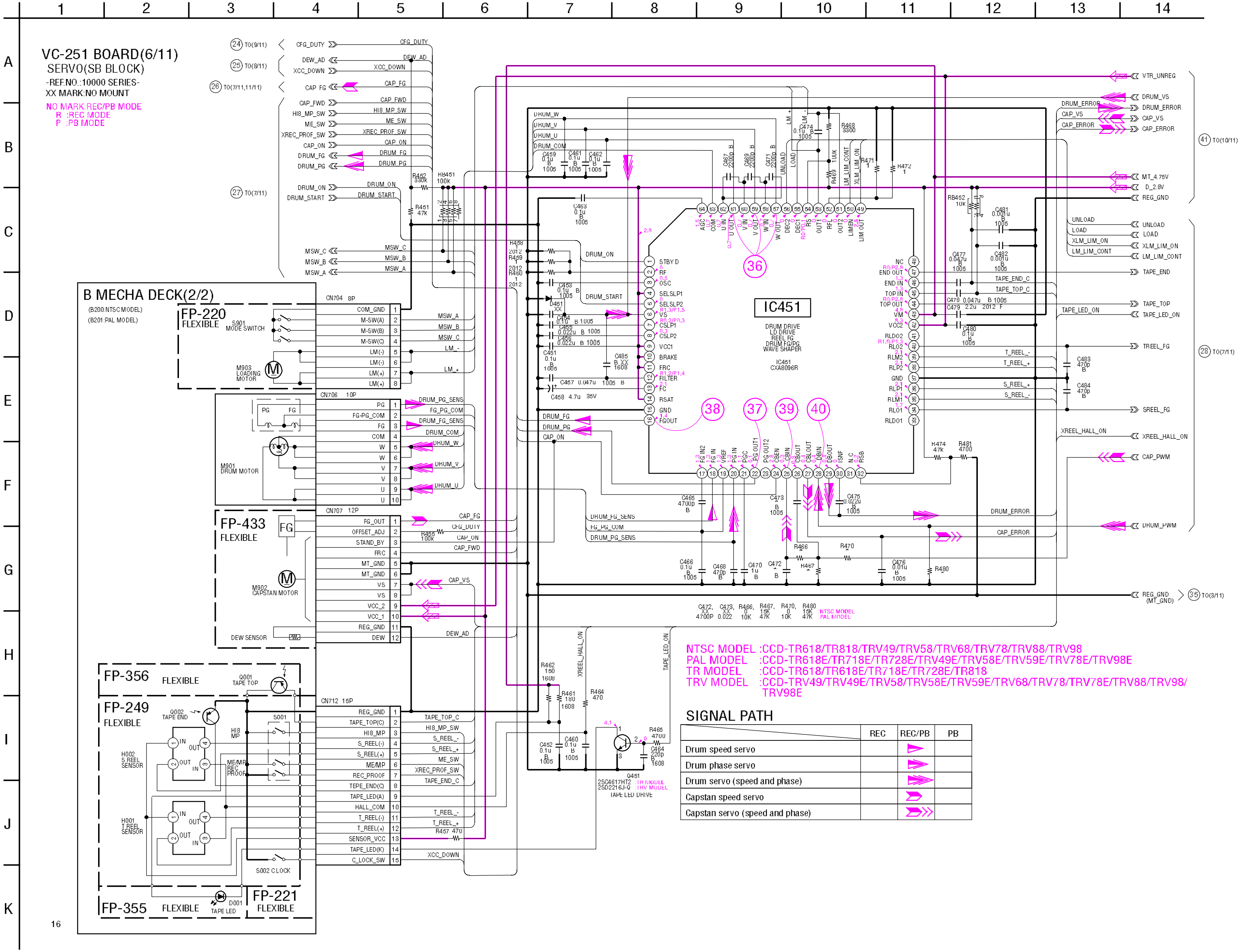

VC-251 BOARD(5/11)
LINE IN/OUT AMP(IO BLOCK)
-REF.NO.: 10000 SERIES-
XX MARK:NO MOUNT
NO MARK:REC/PB MODE
R :REC MODE
P :PB MODE
IC221
LINE IN/OUT
IC221
AN2226FHQ-EB
SIGNAL PATH
VIDEO SIGNAL
CHROMA
Y
Y/CHROMA
REC
PB
16

FP-249 (S/T REEL SENSOR, TAPE TOP), FP-356 (TAPE END), FP-355 (TAPE LED) FLEXIBLE BOARD

— Ref. No. FP-249, 356, 355 Flexible board; 5,000 series —


FP-249 BOARD
Q001
FP-355 BOARD
D001
S001
S002
H001
FP-356 BOARD
Q002
1-658-213-12
1-658-214-12
1-657-787-16
H002

For Schematic Diagram
- Refer to page 4-39 for printed wiring board.
- Refer to page 4-69 for waveforms.


VC-251 BOARD(6/11)
SERVO(SB BLOCK)
-REF.NO.:10000 SERIES-
XX MARK:NO MOUNT
NO MARK:REC/PB MODE
R :REC MODE
P :PB MODE
B MECHA DECK(2/2)
(B200:NTSC MODEL)
(B201:PAL MODEL)
FP-220 FLEXIBLE
S901 MODE SWITCH
M903 LOADING MOTOR
M901 DRUM MOTOR
FP-433 FLEXIBLE
M902 CAPSTAN MOTOR
DEW SENSOR
FP-356 FLEXIBLE
Q001 TAPE TOP
FP-249 FLEXIBLE
Q002 TAPE END
H002 S REEL SENSOR
H001 T REEL SENSOR
S002 CLOCK
FP-355 FLEXIBLE
D001 TAPE LED
FP-221 FLEXIBLE
CN704 8P
CN706 10P
CN707 12P
CN712 15P
IC451
DRUM DRIVE
LD DRIVE
REEL FG
DRUM FG/PG
WAVE SHAPER
IC451 CXA8096R
Q451 2SC4617HT2 :TH MODEL
2SD2216J-Q :TRV MODEL
TAPE LED DRIVE
C472, C473, R466, R467, R470, R480
XX XX 0 15K 0 15K :NTSC MODEL
4700P 0.022 10K 47K 10K 47K :PAL MODEL
TO(9/11)
TO(8/11)
TO(7/11,11/11)
TO(7/11)
TO(10/11)
TO(7/11)
TO(3/11)
VTR_UNREG
DRUM_VS
DRUM_ERROR
CAP_VS
CAP_ERROR
MT_4.75V
D_2.8V
REG_GND
UNLOAD
LOAD
XLM_LIM_ON
LM_LIM_CONT
TAPE_END
TAPE_TOP
TAPE_LED_ON
TREEL_FG
SREEL_FG
XREEL_HALL_ON
CAP_PWM
DRUM_PWM
REG_GND (MT_GND)
16

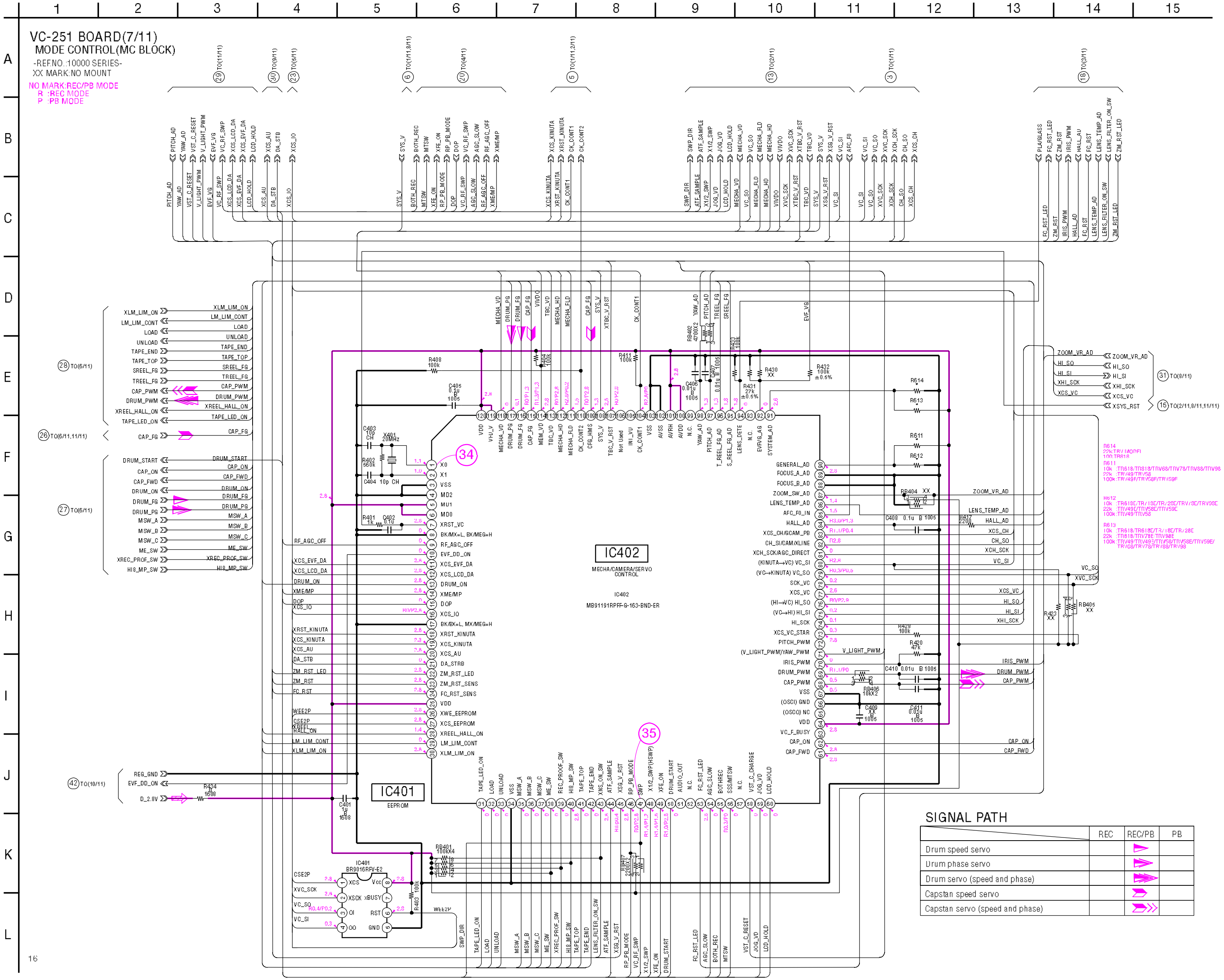
NTSC MODEL :CCD-TR618/TR818/TRV49/TRV58/TRV68/TRV78/TRV88/TRV98
PAL MODEL :CCD-TR618E/TR718E/TR728E/TRV49E/TRV58E/TRV59E/TRV78E/TRV98E
TR MODEL :CCD-TR618/TR618E/TR718E/TR728E/TR818
TRV MODEL :CCD-TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E

SIGNAL PATH

	REC	REC/PB	PB
Drum speed servo		▶	
Drum phase servo		▶▶	
Drum servo (speed and phase)		▶▶▶	
Capstan speed servo		➤	
Capstan servo (speed and phase)		➤»	

For Schematic Diagram

- Refer to page 4-39 for printed wiring board.
- Refer to page 4-69 for waveforms.

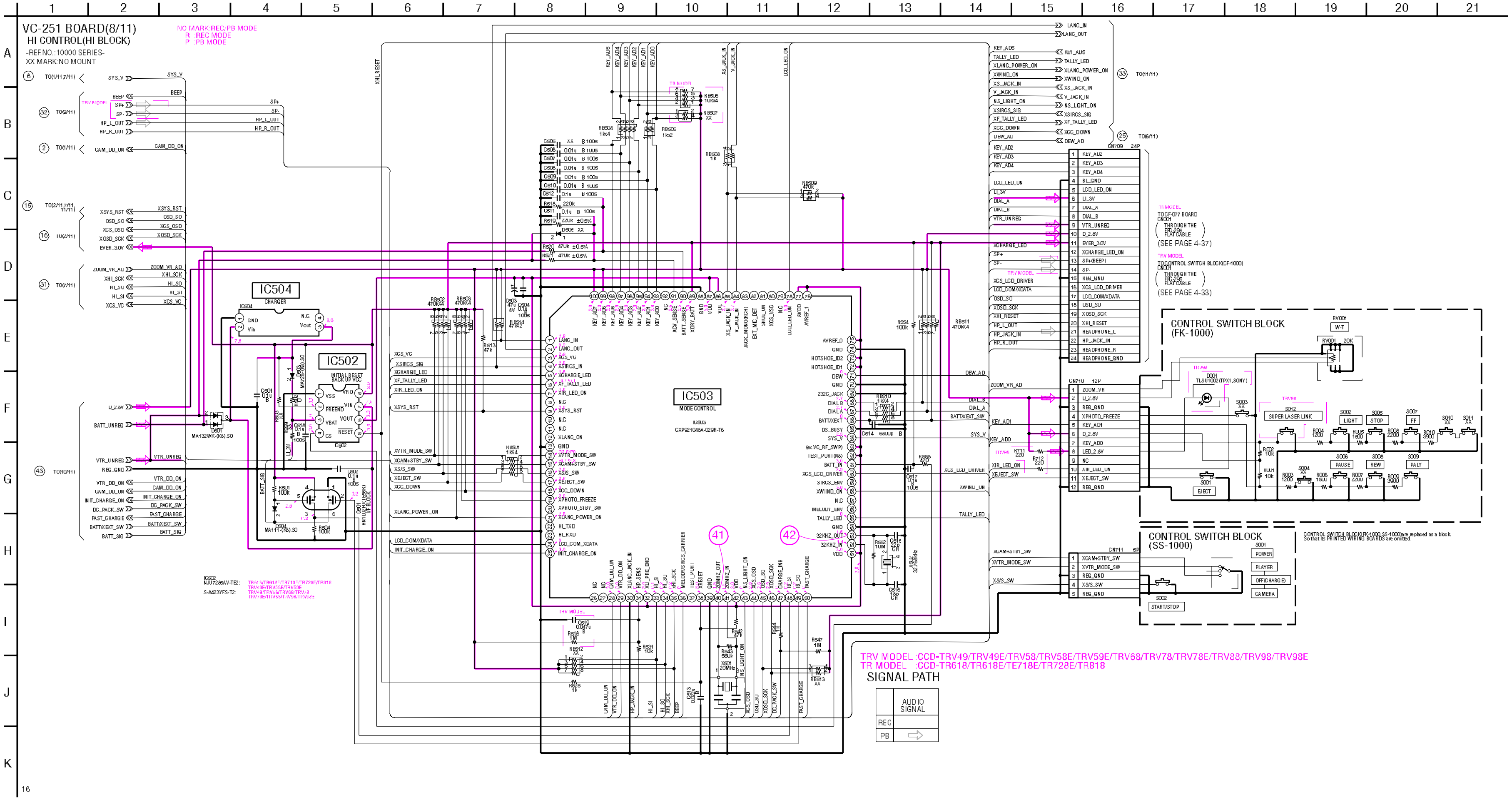

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
A
B
C
D
E
F
G
H
I
J
K
L
VC-251 BOARD(7/11)
MODE CONTROL(MC BLOCK)
-REF.NO.:10000 SERIES-
XX MARK:NO MOUNT
NO MARK:REC/PB MODE
R :REC MODE
P :PB MODE
IC402
MECHA/CAMERA/SERVO CONTROL
IC402
MB91191RPFF-G-163-BND-ER
IC401
EEPROM
IC401
BR9016RFV-E2
34
35
16

SIGNAL PATH

	REC	REC/PB	PB
Drum speed servo		▷	
Drum phase servo		▷	
Drum servo (speed and phase)		▷▷	
Capstan speed servo		▷	
Capstan servo (speed and phase)		▷▷	

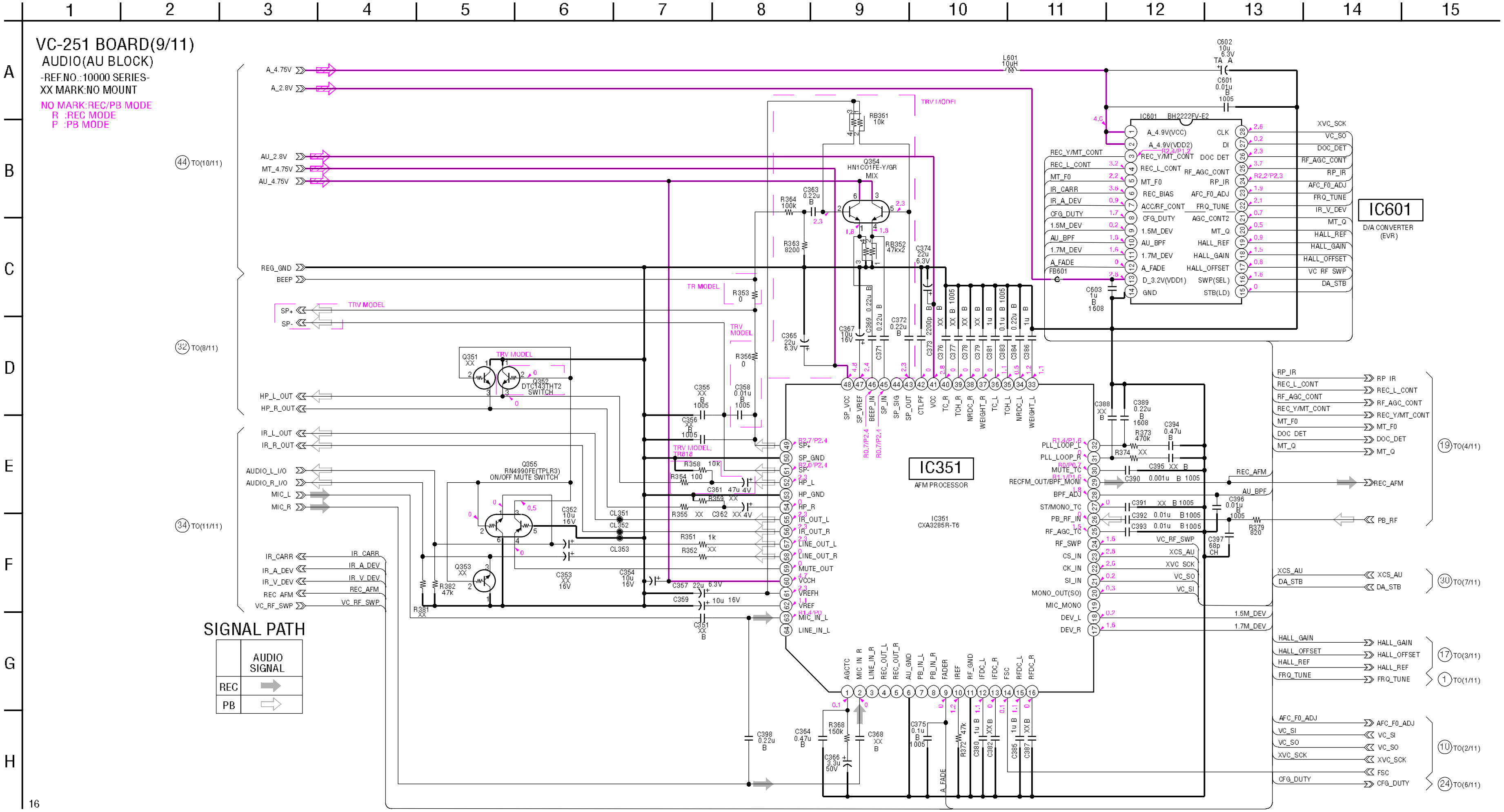
For Schematic Diagram

- Refer to page 4-39 for printed wiring board.
- Refer to page 4-69 for waveforms.


VC-251 BOARD(8/11)
HI CONTROL(HI BLOCK)
-REF.NO.:10000 SERIES-
XX MARK:NO MOUNT
NO MARK:REC/PB MODE
R :REC MODE
P :PB MODE
IC504
CHARGER
IC502
INITIAL RESET BACK UP VCC
IC503
MODE CONTROL
CXP921048A-029R-T6
MA132WK-(K8).SO
MA111-(K8).SO
CONTROL SWITCH BLOCK (FK-1000)
CONTROL SWITCH BLOCK (SS-1000)
CONTROL SWITCH BLOCK(FK-1000,SS-1000)are replaced as a block. So that its PRINTED WIRING BOARDS are omitted.
SUPER LASER LINK
LIGHT
STOP
FF
PAUSE
REW
PALY
EJECT
POWER
PLAYER
OFF(CHARGE)
CAMERA
START/STOP
TO CF-077 BOARD CN001 THROUGH THE FP-306 FLAT CABLE (SEE PAGE 4-37)
TO CONTROL SWITCH BLOCK(CF-1000) CN001 THROUGH THE FP-306 FLAT CABLE (SEE PAGE 4-33)
41
42
TRV MODEL :CCD-TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E
TR MODEL :CCD-TR618/TR618E/TE718E/TR728E/TR818
SIGNAL PATH
AUDIO SIGNAL
REC
PB

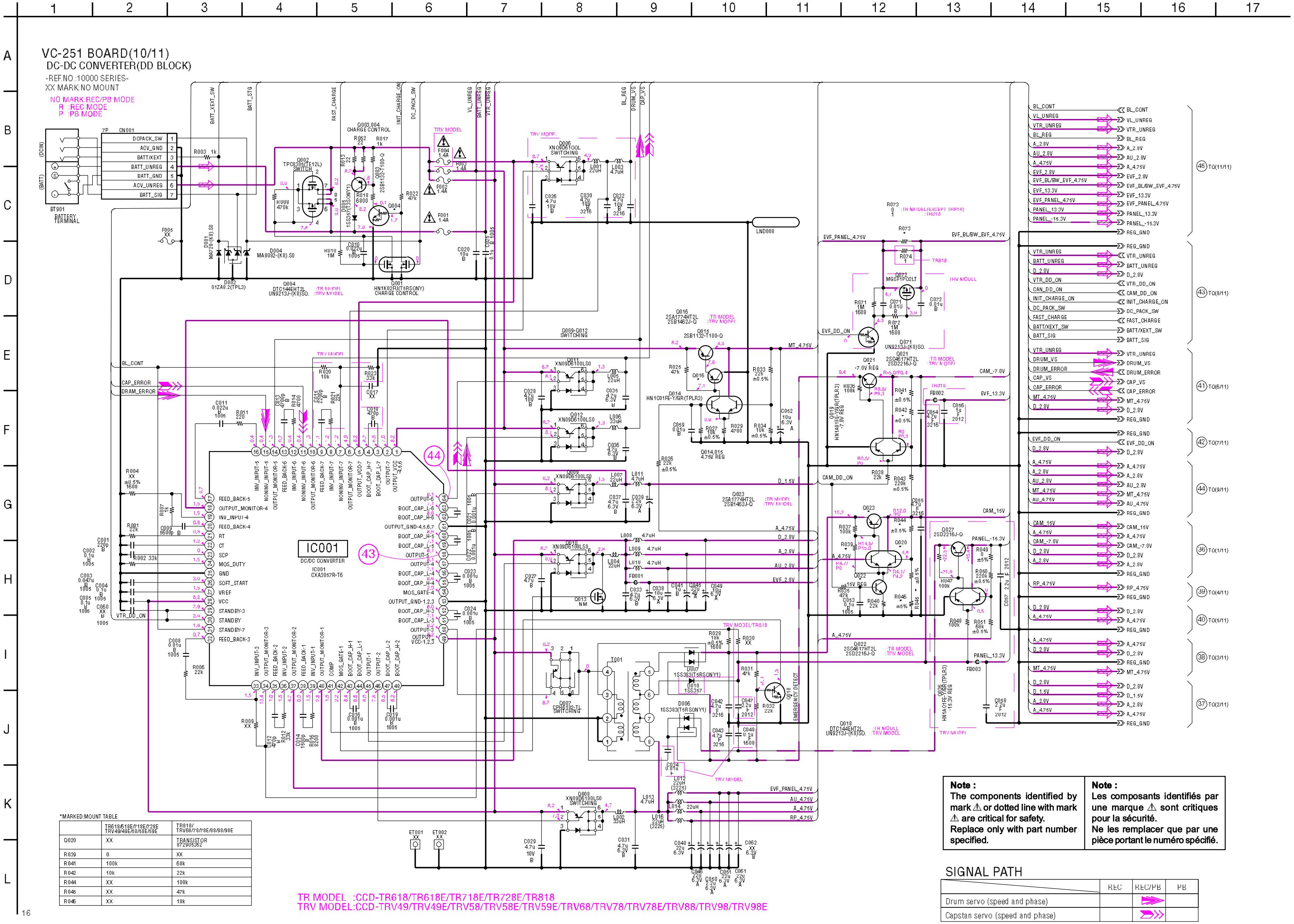
For Schematic Diagram

- Refer to page 4-39 for printed wiring board.


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
A B C D E F G H
VC-251 BOARD(9/11)
AUDIO(AU BLOCK)
-REF.NO.:10000 SERIES-
XX MARK:NO MOUNT
NO MARK:REC/PB MODE
R :REC MODE
P :PB MODE
A_4.75V
A_2.8V
AU_2.8V
MT_4.75V
AU_4.75V
44 TO(10/11)
REG_GND
BEEP
SP+
SP-
TRV MODEL
32 TO(8/11)
HP_L_OUT
HP_R_OUT
IR_L_OUT
IR_R_OUT
AUDIO_L_I/O
AUDIO_R_I/O
MIC_L
MIC_R
34 TO(11/11)
IR_CARR
IR_A_DEV
IR_V_DEV
REC AFM
VC_RF_SWP
Q351 XX
Q352 DTC143THT2 SWITCH
Q355 RN4990FE(TPLR3) ON/OFF MUTE SWITCH
Q353 XX
Q354 HN1C01FE-Y/GR MIX
RB351 10k
RB352 47k×2
L601 10uH
C602 10u 6.3V TA A
C601 0.01u B 1005
IC601 BH2222FV-E2
IC601
D/A CONVERTER (EVR)
A_4.9V(VCC)
A_4.9V(VDD2)
REC_Y/MT_CONT
REC_L_CONT
MT_F0
REC_BIAS
ACC/RF_CONT
CFG_DUTY
1.5M_DEV
AU_BPF
1.7M_DEV
A_FADE
D_3.2V(VDD1)
GND
CLK
DI
DOC DET
RF_AGC_CONT
RP_IR
AFC_F0_ADJ
FRQ_TUNE
AGC_CONT2
MT_Q
HALL_REF
HALL_GAIN
HALL_OFFSET
SWP(SEL)
STB(LD)
XVC_SCK
VC_SO
DOC_DET
RF_AGC_CONT
RP_IR
AFC_F0_ADJ
FRQ_TUNE
IR_V_DEV
MT_Q
HALL_REF
HALL_GAIN
HALL_OFFSET
VC RF SWP
DA_STB
C603 1u B 1608
FB601
IC351
AFM PROCESSOR
IC351 CXA3285R-T6
SP_VCC SP_VREF BEEP_IN SP_SIG SP_OUT CTLPF VCC TC_R TCH_R NRDC_R WEIGHT_R TC_L TCH_L NRDC_L WEIGHT_L
SP+ SP_GND SP- HP_L HP_GND HP_R IR_OUT_L IR_OUT_R LINE_OUT_L LINE_OUT_R MUTE_OUT VCCH VREFH VREF MIC_IN_L LINE_IN_L
AGCTC MIC_IN_R LINE_IN_R REC_OUT_L REC_OUT_R AU_GND PB_IN_L PB_IN_R FADER IREF RF_GND IFDC_L IFDC_R FSC RFDC_L RFDC_R
PLL_LOOP_C PLL_LOOP_R MUTE_TC RECFM_OUT/BPF_MONI BPF_ADJ ST/MONO_TC PB_RF_IN RF_AGC_TC RF_SWP CS_IN CK_IN SI_IN MONO_OUT(SO) MIC_MONO DEV_L DEV_R
RP_IR
REC_L_CONT
RF_AGC_CONT
REC_Y/MT_CONT
MT_F0
DOC DET
MT_Q
19 TO(4/11)
REC_AFM
AU_BPF
PB_RF
XCS_AU
DA_STB
30 TO(7/11)
1.5M_DEV
1.7M_DEV
HALL_GAIN
HALL_OFFSET
HALL_REF
FRQ_TUNE
17 TO(3/11)
1 TO(1/11)
AFC_F0_ADJ
VC_SI
VC_SO
XVC_SCK
FSC
CFG_DUTY
10 TO(2/11)
24 TO(6/11)
A_FADE
SIGNAL PATH
AUDIO SIGNAL
REC
PB
16

TR MODEL :CCD-TR618/TR618E/TR718E/TR728E/TR818
TRV MODEL :CCD-TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E

For Schematic Diagram
- Refer to page 4-39 for printed wiring board.
- Refer to page 4-69 for waveforms.


VC-251 BOARD(10/11)
DC-DC CONVERTER(DD BLOCK)
-REF.NO.:10000 SERIES-
XX MARK:NO MOUNT
NO MARK:REC/PB MODE
R :REC MODE
P :PB MODE
BT901 BATTERY TERMINAL
CN001
IC001 DC/DC CONVERTER CXA3057R-T6
Q002 TPC8305(TE12L) SWITCH
Q003,004 CHARGE CONTROL
Q001 HN1K02FU(TE85SONY) CHARGE CONTROL
Q006 XN09D61OOL SWITCHING
Q009-012 SWITCHING
Q014,015 4.75V REG
Q021 -7.0V REG
Q007 CPH6102-TL SWITCHING
Q008 XN09D6100LS0 SWITCHING
Q019 -15.3V REG
Q018 EMERGENCY DETECT
(46) TO(11/11)
(43) TO(8/11)
(41) TO(6/11)
(42) TO(7/11)
(44) TO(9/11)
(36) TO(1/11)
(39) TO(4/11)
(40) TO(5/11)
(38) TO(3/11)
(37) TO(2/11)
TRV MODEL
TR MODEL

*MARKED:MOUNT TABLE

	TR618/618E/718E/728E TRV49/49E/58/58E/59E	TR818/ TRV68/78/78E/88/98/98E
Q020	XX	TRANSISTOR 8729U5352
R039	0	XX
R041	100k	68k
R042	10k	22k
R044	XX	100k
R045	XX	47k
R046	XX	18k

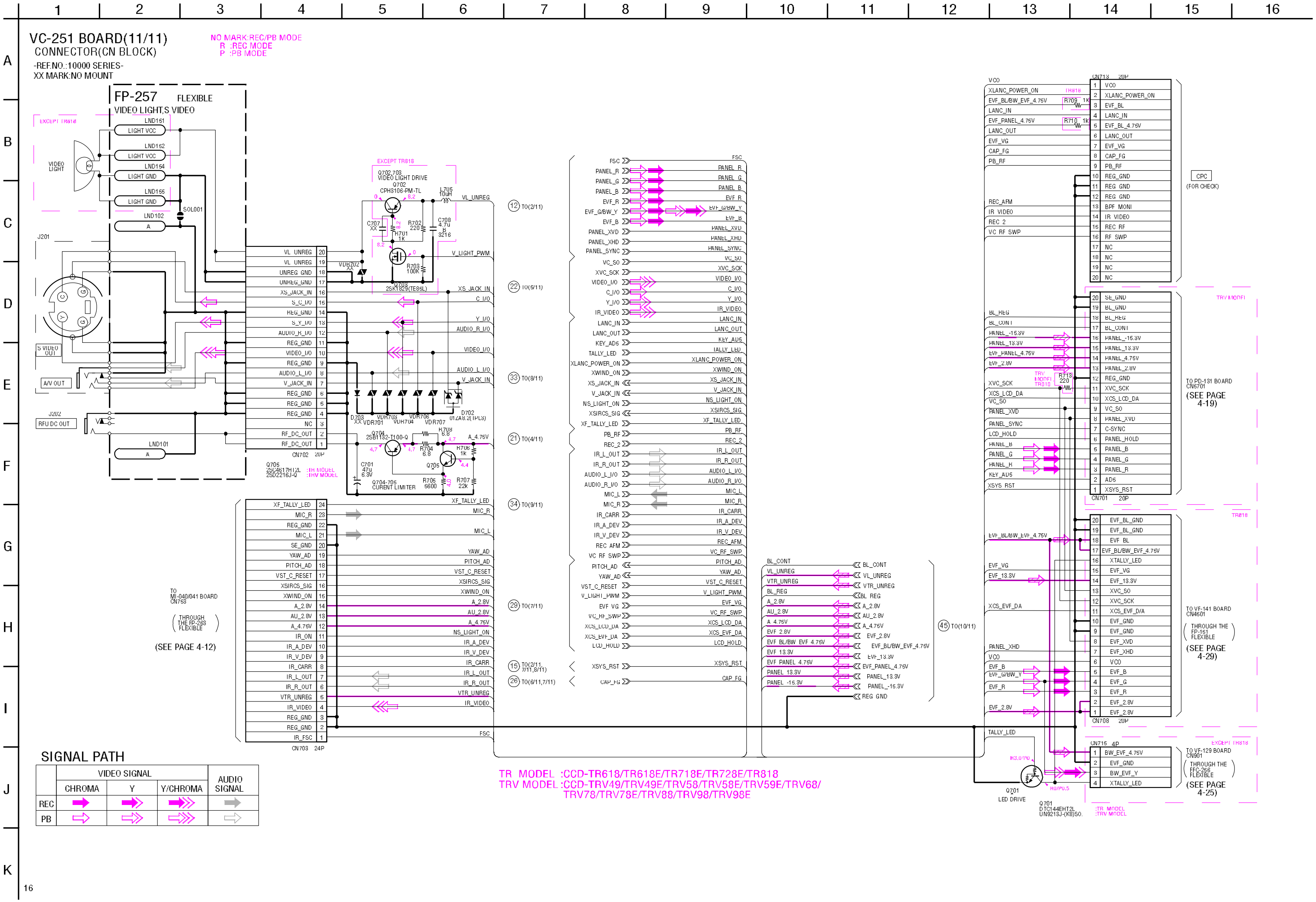
TR MODEL :CCD-TR618/TR618E/TR718E/TR728E/TR818
TRV MODEL:CCD-TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E

Note :	**Note :**
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	**Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.**

SIGNAL PATH

	REC	REC/PB	PB
Drum servo (speed and phase)		➡	
Capstan servo (speed and phase)		➡	

For Schematic Diagram
- Refer to page 4-39 for printed wiring board.

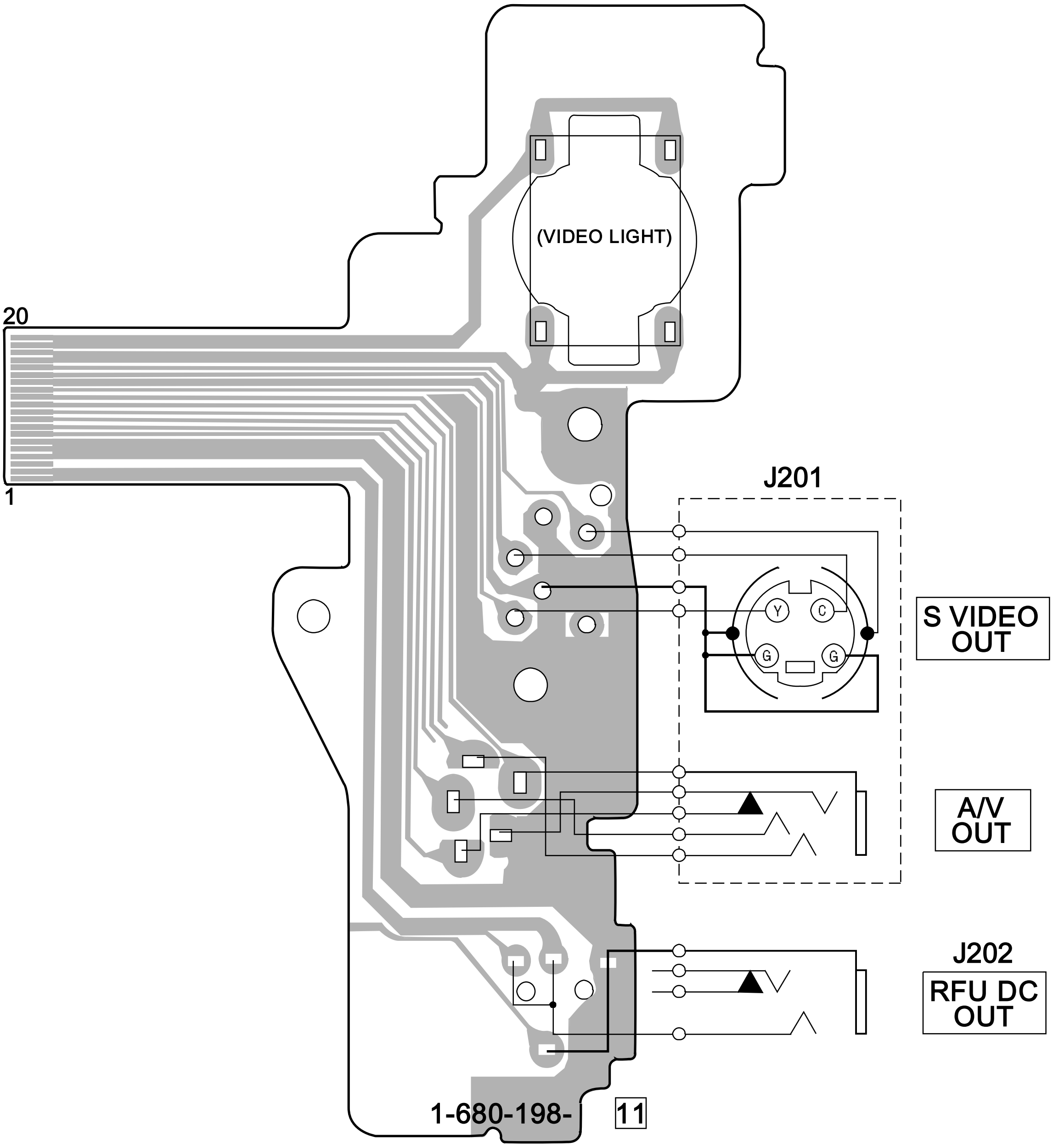

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
A B C D E F G H I J K
VC-251 BOARD(11/11)
CONNECTOR(CN BLOCK)
-REF.NO.:10000 SERIES-
XX MARK:NO MOUNT
NO MARK:REC/PB MODE
R :REC MODE
P :PB MODE
FP-257 FLEXIBLE
VIDEO LIGHT,S VIDEO
EXCEPT TR818
VIDEO LIGHT
LND151 LIGHT VCC
LND152 LIGHT VCC
LND154 LIGHT GND
LND155 LIGHT GND
LND102 A
SOL001
J201
S VIDEO OUT
A/V OUT
J202
RFU DC OUT
LND101 A
CN702 20P
VL_UNREG 20
VL_UNREG 19
UNREG_GND 18
UNREG_GND 17
XS_JACK_IN 16
S_C_I/O 15
REG_GND 14
S_Y_I/O 13
AUDIO_R_I/O 12
REG_GND 11
VIDEO_I/O 10
REG_GND 9
AUDIO_L_I/O 8
V_JACK_IN 7
REG_GND 6
REG_GND 5
REG_GND 4
NC 3
RF_DC_OUT 2
RF_DC_OUT 1
EXCEPT TR818
Q702,703
VIDEO LIGHT DRIVE
Q702
CPH3106-PM-TL
L705 10uH
VL_UNREG
C707 XX
R702 220
C708 4.7u B
R701 1K
Q703
2SK1829(TE85L)
R703 100K
V_LIGHT_PWM
VDR702 XX
XS_JACK_IN
C_I/O
Y_I/O
AUDIO_R_I/O
VIDEO_I/O
AUDIO_L_I/O
V_JACK_IN
D703 XX
VDR701 VDR703 VDR704 VDR706 VDR707
D702 01ZA8.2(TPL3)
Q704 2SB1132-T100-Q
R708 6.8
A_4.75V
R704 6.8
R706 1k
Q705
2SC4617H12L :IH MODEL
2SD2216J-Q :HV MODEL
C701 47u 6.3V
Q704-705 CURENT LIMITER
R705 5600
R707 22k
CN703 24P
XF_TALLY_LED 24
MIC_R 23
REG_GND 22
MIC_L 21
SE_GND 20
YAW_AD 19
PITCH_AD 18
VST_C_RESET 17
XSIRCS_SIG 16
XWIND_ON 15
A_2.8V 14
AU_2.8V 13
A_4.75V 12
IR_ON 11
IR_A_DEV 10
IR_V_DEV 9
IR_CARR 8
IR_L_OUT 7
IR_R_OUT 6
VTR_UNREG 5
IR_VIDEO 4
REG_GND 3
REG_GND 2
IR_FSC 1
XF_TALLY_LED MIC_R MIC_L YAW_AD PITCH_AD VST_C_RESET XSIRCS_SIG XWIND_ON A_2.8V AU_2.8V A_4.75V NS_LIGHT_ON IR_A_DEV IR_V_DEV IR_CARR IR_L_OUT IR_R_OUT VTR_UNREG IR_VIDEO FSC
TO MI-040/041 BOARD CN753
THROUGH THE FP-263 FLEXIBLE
(SEE PAGE 4-12)
⑫ TO(2/11)
㉒ TO(5/11)
㉝ TO(8/11)
㉑ TO(4/11)
㉞ TO(9/11)
㉙ TO(7/11)
⑮ TO(2/11, 7/11,8/11)
㉖ TO(6/11,7/11)
㊺ TO(10/11)
FSC PANEL_R PANEL_G PANEL_B EVF_R EVF_G/BW_Y EVF_B PANEL_XVD PANEL_XHD PANEL_SYNC VC_SO XVC_SCK VIDEO_I/O C_I/O Y_I/O IR_VIDEO LANC_IN LANC_OUT KEY_AD5 TALLY_LED XLANC_POWER_ON XWIND_ON XS_JACK_IN V_JACK_IN NS_LIGHT_ON XSIRCS_SIG XF_TALLY_LED PB_RF REC_2 IR_L_OUT IR_R_OUT AUDIO_L_I/O AUDIO_R_I/O MIC_L MIC_R IR_CARR IR_A_DEV IR_V_DEV REC_AFM VC_RF_SWP PITCH_AD YAW_AD VST_C_RESET V_LIGHT_PWM EVF_VG VC_RF_SWP XCS_LCD_DA XCS_EVF_DA LCD_HOLD XSYS_RST CAP_FG
BL_CONT VL_UNREG VTR_UNREG BL_REG A_2.8V AU_2.8V A_4.75V EVF_2.8V EVF_BL/BW_EVF_4.75V EVF_13.3V EVF_PANEL_4.75V PANEL_13.3V PANEL_-15.3V REG_GND
CN713 20P
1 VCO
2 XLANC_POWER_ON
3 EVF_BL
4 LANC_IN
5 EVF_BL_4.75V
6 LANC_OUT
7 EVF_VG
8 CAP_FG
9 PB_RF
10 REG_GND
11 REG_GND
12 REG_GND
13 BPF_MONI
14 IR_VIDEO
15 REC_RF
16 RF_SWP
17 NC
18 NC
19 NC
20 NC
TR818 R709 1k R710 1k
CPC (FOR CHECK)
TRV MODEL
CN701 20P
20 SE_GND
19 BL_GND
18 BL_REG
17 BL_CONT
16 PANEL_-15.3V
15 PANEL_13.3V
14 PANEL_4.75V
13 PANEL_2.8V
12 REG_GND
11 XVC_SCK
10 XCS_LCD_DA
9 VC_SO
8 PANEL_XVD
7 C-SYNC
6 PANEL_HOLD
5 PANEL_B
4 PANEL_G
3 PANEL_R
2 AD5
1 XSYS_RST
TRV MODEL TR818 R713 220
TO PD-131 BOARD CN5701
(SEE PAGE 4-19)
TR818
CN708 20P
20 EVF_BL_GND
19 EVF_BL_GND
18 EVF_BL
17 EVF_BL/BW_EVF_4.75V
16 XTALLY_LED
15 EVF_VG
14 EVF_13.3V
13 XVC_SO
12 XVC_SCK
11 XCS_EVF_D/A
10 EVF_GND
9 EVF_GND
8 EVF_XVD
7 EVF_XHD
6 VCO
5 EVF_B
4 EVF_G
3 EVF_R
2 EVF_2.8V
1 EVF_2.8V
TO VF-141 BOARD CN4601
THROUGH THE FP-161 FLEXIBLE
(SEE PAGE 4-29)
EXCEPT TR818
CN715 4P
1 BW_EVF_4.75V
2 EVF_GND
3 BW_EVF_Y
4 XTALLY_LED
TO VF-129 BOARD CN901
THROUGH THE FFC-256 FLEXIBLE
(SEE PAGE 4-25)
TALLY_LED
Q701 LED DRIVE
Q701
DTC144EHT2L :TR MODEL
UN9213J-(K8)SO. :TRV MODEL
TR MODEL :CCD-TR618/TR618E/TR718E/TR728E/TR818
TRV MODEL :CCD-TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/
TRV78/TRV78E/TRV88/TRV98/TRV98E
SIGNAL PATH
VIDEO SIGNAL
CHROMA
Y
Y/CHROMA
AUDIO SIGNAL
REC
PB

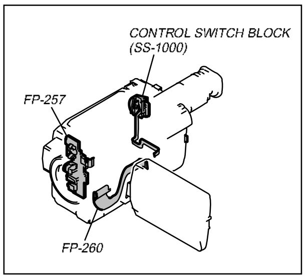
CONNECTOR
VC-251 (11/11)

FP-257 (VIDEO LIGHT, S VIDEO) FLEXIBLE BOARD

— Ref. No. FP-257 Flexible board; 10,000 Series —

FP-257 FLEXIBLE

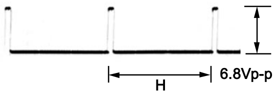

(VIDEO LIGHT)
20
1
J201
Y
C
G
G
S VIDEO OUT
A/V OUT
J202
RFU DC OUT
1-680-198- 11


CONTROL SWITCH BLOCK (SS-1000)
FP-257
FP-260

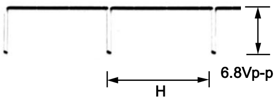
4-3. WAVEFORMS

CD-281/286 BOARD
REC

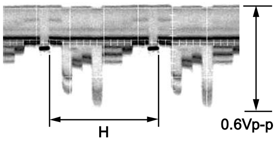
① IC191 ①,②



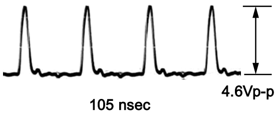
② IC191 ③,④



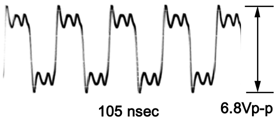
③ IC191 ⑦



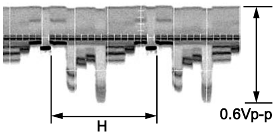
④ IC191 ⑫



⑤ IC191 ⑬,⑭

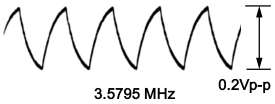


⑥ Q191 Ⓔ

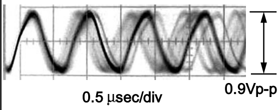


MI-040/041 BOARD
REC/PB

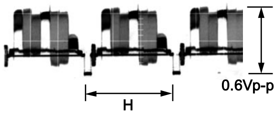
① IC3901 ⑦
IR ON



② IC3901 ㉒
IR ON

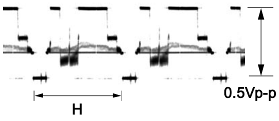


③ IC3901 ㊶
IR ON

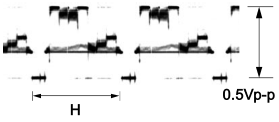


PD-131 BOARD

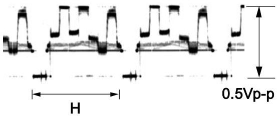
① IC5501 ㊽



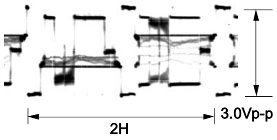
② IC5501 ㊼



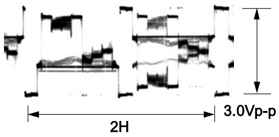
③ IC5501 ㊻



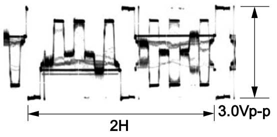
④ IC5501 ⑳



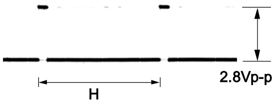
⑤ IC5501 ㉒



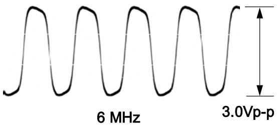
⑥ IC5501 ㉔



⑦ IC5502 ①

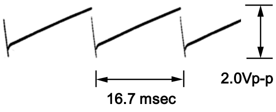


⑧ IC5502 ㉖

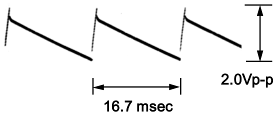


VF-129 BOARD
REC/PB

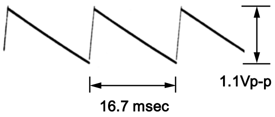
① IC901 ①,⑤



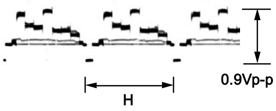
② IC901 ③



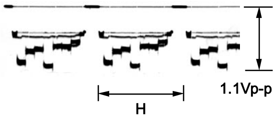
③ IC901 ⑦



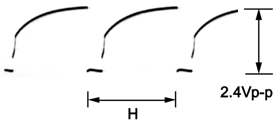
④ IC901 ⑪



⑤ IC901 ⑬

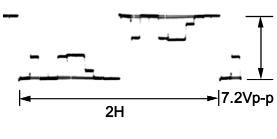


⑥ IC901 ⑯

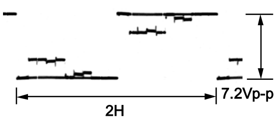


VF-141 BOARD

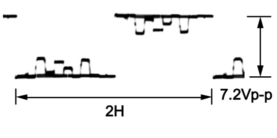
① IC4501 ⑳



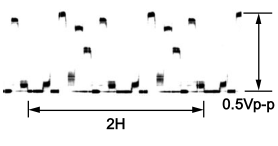
② IC4501 ㉒



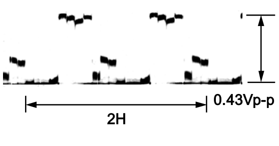
③ IC4501 ㉔



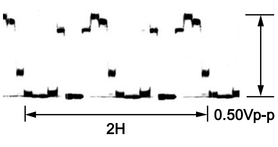
④ IC4501 ㊻



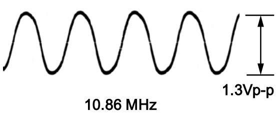
⑤ IC4501 ㊼



⑥ IC4501 ㊽

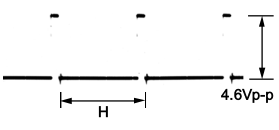


⑦ IC4502 ㉖



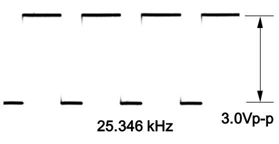
LB-062 BOARD

① IC4601 ④



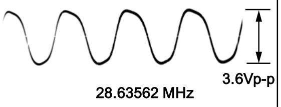
CF-077 BOARD

① IC001 ②

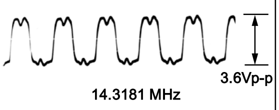


VC-251 BOARD

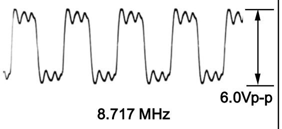
① IC271 ⑤
REC/PB



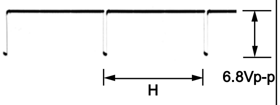
② IC271 ⑪
REC/PB



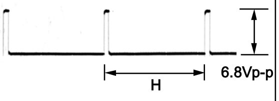
③ IC271 ㉑
REC



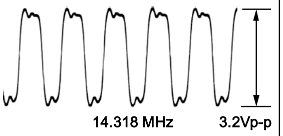
④ IC271 ㉖
REC



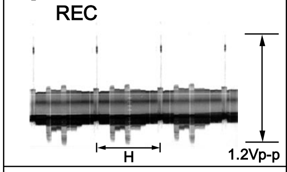
⑤ IC271 ㉘
REC



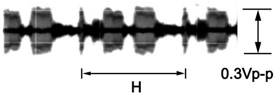
⑥ IC272 ⑯
REC/PB



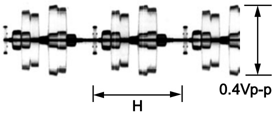
⑦ IC272 ㉚
REC



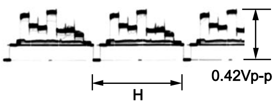
⑧ IC272 ㊱
PB



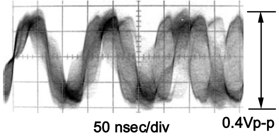
⑨ IC151 (213)
REC/PB



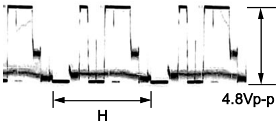
⑩ IC151 ④
REC/PB



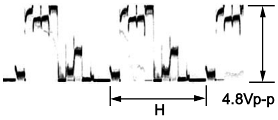
⑪ IC151 ⑦
REC/PB



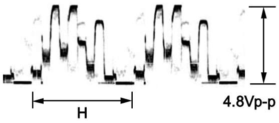
⑫ IC151 ⑭
REC/PB



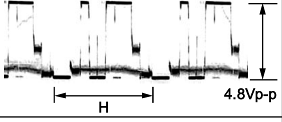
⑬ IC151 ⑰
REC/PB



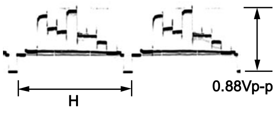
⑭ IC151 ㉔
REC/PB



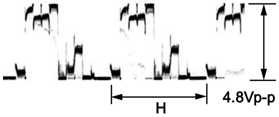
⑮ IC151 ㉗
REC
(COLOR EVF MODEL)



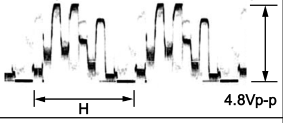
⑯ IC151 ㉞
REC
(B/W EVF MODEL)



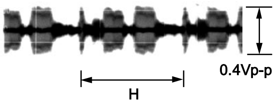
⑯ IC151 ㉞
REC
(COLOR EVF MODEL)



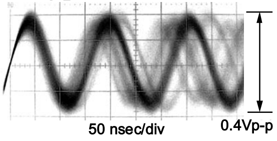
⑰ IC151 ㊲
REC
(COLOR EVF MODEL)



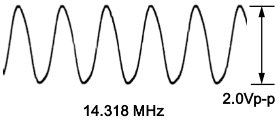
⑱ IC151 ㊾
PB



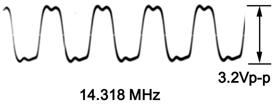
⑲ IC151 (51)
PB



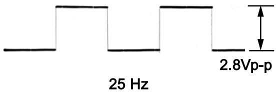
⑳ IC151 (66)
PB



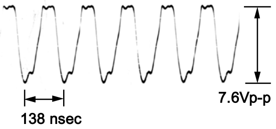
㉑ IC151 (81)
REC/PB



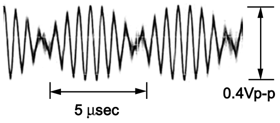
㉒ IC151 (85)
REC/PB



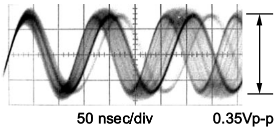
㉓ CN101 ⑯, Q101 Ⓒ
REC



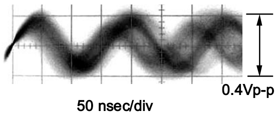
㉔ IC101 ①
REC



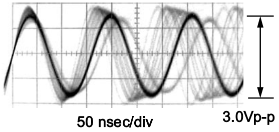
㉕ IC101 ⑤
REC



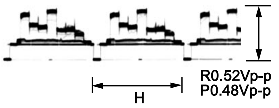
㉖ IC101 ⑭
PB



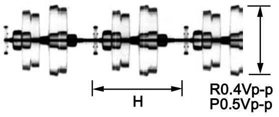
㉗ IC101 ㉗,㉞
REC



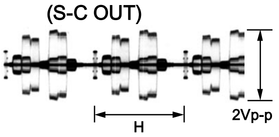
㉘ IC221 (44)
REC/PB



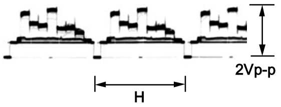
㉙ IC221 ⑤
REC/PB



㉚ IC221 ⑭
REC/PB
(S-C OUT)

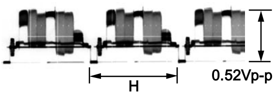


㉛ IC221 ⑱
REC/PB
(S-Y OUT)

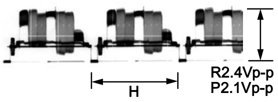


VC-251 BOARD

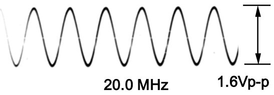
㉜ IC221 ㉔
REC/PB
IR ON



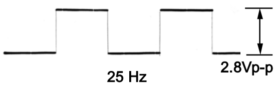
㉝ IC221 ㉒
REC/PB



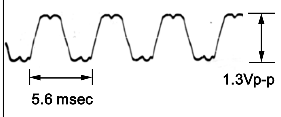
㉞ IC402 ①
REC/PB



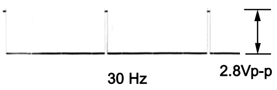
㉟ IC402 ㊼
REC/PB



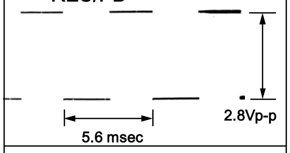
㊱ IC451 (57),(59),(61)
REC/PB



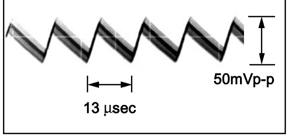
㊲ IC451 ㉒
REC/PB



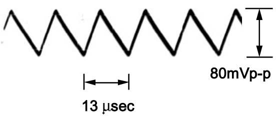
㊳ IC451 ⑯
REC/PB



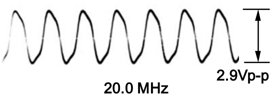
㊴ IC451 ㉕
REC/PB



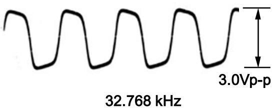
㊵ IC451 ㉘
REC/PB



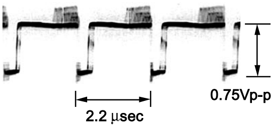
㊶ IC503 ㊵
REC/PB



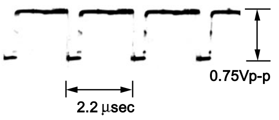
㊷ IC503 (53)
REC/PB



㊸ IC001 (58)
REC/PB



㊹ IC001 (64)
REC/PB



4-4. MOUNTED PARTS LOCATION

CD-281/286 BOARD (SIDE A)

C191	B-2
C196	B-1
IC191	A-2

CD-281/286 BOARD (SIDE B)

C194	B-5
C195	A-4
C197	A-4
CN191	A-5
L191	B-4
Q191	A-5
R191	A-5
R192	A-4
R193	A-4
R194	B-4
R195	B-5
R198	A-4

MI-040/041 BOARD (SIDE A)

C758	D-2
C762	D-1
C775	B-2
C784	C-2
C791	B-2
C794	C-3
C799	B-4
C800	C-4
C808	C-4
C809	C-4
C810	B-3
C3901	B-2
C3902	B-2
C3903	B-2
C3904	B-2
C3905	B-1
C3906	B-1
C3907	B-2
C3908	B-1
C3910	B-2
C3911	B-2
C3912	C-3
C3913	B-3
C3914	A-2
C3915	A-1
C3916	A-1
C3917	A-2
C3918	A-2
C3919	A-1
C3920	A-1
C3921	A-3
C3922	A-1
C3923	A-3
C3924	A-1
C3925	A-1
C3926	A-2
C3929	A-2
C3930	A-2
C3932	C-3
C3934	A-3
C3935	A-2
D752	B-3
D753	B-4
D754	A-1
D755	C-4
D756	C-4
D3901	B-4
D3902	A-3
D3903	A-4
IC751	B-3
IC3901	A-2
L3903	A-3
R786	B-4
R797	C-3
R3901	A-3
R3903	B-2
R3904	B-2
R3905	B-1
R3907	B-1
R3908	A-3
R3909	A-2
R3912	A-3
R3913	A-1
R3914	A-1
R3915	A-2
R3916	A-2
R3917	A-2
R3926	A-3
R3927	B-3
R3931	B-2
R3945	A-1
R3946	A-3
SE751	C-2
SE752	E-2

MI-040/041 BOARD (SIDE B)

C759	E-7
C761	B-5
C763	C-7
C764	C-5
C768	C-7
C769	B-5
C770	C-5
C772	C-7
C773	B-5
C774	C-7
C776	C-5
C777	C-7
C779	B-5
C780	B-5
C781	C-5
C782	C-5
C783	B-5
C785	B-5
C786	B-5
C787	C-6
C788	B-5
C789	B-8
C796	C-5
C3909	B-7
C3931	A-7
C3933	B-6
CN751	C-5
CN752	C-6
CN753	B-6
IC752	B-5
IC753	B-7
L751	B-6
L3902	B-7
L3904	A-6
L3905	A-6
L3906	B-6
Q3901	A-7
Q3902	A-7
Q3903	A-5
Q3904	A-5
R757	C-5
R761	B-5
R764	B-5
R765	B-5
R766	C-5
R767	C-5
R768	B-5
R769	C-5
R770	B-5
R771	B-5
R772	B-5
R774	C-5
R775	C-6
R776	C-6
R779	B-7
R780	C-7
R782	B-7
R783	B-7
R784	B-7
R785	B-7
R788	B-5
R789	B-5
R3902	B-7
R3919	A-7
R3920	A-7
R3921	A-7
R3922	A-5
R3923	A-6
R3924	B-6
R3925	A-6
R3928	B-6
R3929	A-6
R3930	B-7
RB751	C-7
RB752	E-7
RB3901	B-8

PD-131 BOARD (SIDE A)

C5501	C-3
C5502	C-3
C5503	B-4
C5504	B-3
C5505	B-4
C5506	B-4
C5507	B-4
C5508	C-3
C5509	C-4
C5510	B-4
C5511	B-3
C5512	B-3
C5513	B-4
C5514	C-4
C5515	B-3
C5516	A-3
C5517	A-4
C5518	A-4
C5519	A-4
C5520	C-3
C5521	B-2
C5522	B-1
C5523	A-3
C5524	A-1
C5525	B-4
C5526	B-4
C5527	B-4
C5528	C-2
C5529	B-3
C5530	A-2
C5531	A-2
C5532	B-1
C5601	A-4
C5602	C-5
C5603	C-6
C5604	A-5
C5605	A-5
C5606	A-6
C5607	C-5
C5608	C-6
CN5501	A-2
CN5502	B-2
CN5601	A-6
CN5701	B-6
CN5702	D-6
D5501	C-3
D5502	A-4
D5503	A-2
D5601	A-5
D5603	D-2
D5604	D-2
ET5601	A-5
ET5602	C-6
FB5501	C-3
FB5502	C-4
IC5501	B-4
IC5502	B-3
IC5601	A-4
IC5602	A-5
L5501	C-3
L5502	C-4
L5503	B-3
L5601	C-5
Q5501	C-3
Q5502	B-1
Q5503	A-2
Q5504	A-2
Q5505	B-1
Q5601	A-4
Q5602	C-6
Q5603	A-5
R5501	C-4
R5502	C-4
R5503	C-4
R5504	B-3
R5505	B-4
R5506	B-4
R5507	B-4
R5508	B-4
R5509	B-4
R5510	B-3
R5511	B-3
R5512	B-4
R5513	B-3
R5514	A-3
R5515	A-3
R5516	C-2
R5517	B-2
R5518	B-2
R5519	B-2
R5520	A-3
R5521	B-2
R5522	B-2
R5523	C-4
R5524	C-4
R5525	C-2
R5526	C-3
R5527	A-1
R5528	A-2
R5529	A-2
R5530	A-2
R5531	C-4
R5532	B-1
R5533	B-2
R5534	B-3
R5535	B-3
R5539	D-6
R5601	C-5
R5602	A-5
R5603	B-5
R5604	C-5
R5605	A-6
R5606	A-5
R5607	A-5
R5608	D-2
R5609	D-2
R5610	A-5
R5611	A-5
R5702	D-6
R5703	C-6
RB5501	A-3
RB5502	A-2
RB5503	A-2
RB5601	A-4
T5601	B-6

PD-131 BOARD (SIDE B)

D5602	A-8

VF-129 BOARD (SIDE A)

C903	A-2
C904	B-2
C906	A-2
C907	A-1
C909	B-1
C913	A-2
CN902	B-1
D901	A-1
IC901	A-1
L901	B-1
L903	D-1
R903	A-1
R907	B-1
R908	B-2
R909	B-2
R910	B-2
R912	A-2
R913	C-2
R914	C-1
R915	A-1
R916	A-1
R917	A-1
R922	D-1
R927	B-1
R928	B-1
R929	A-1
R930	C-1
R931	C-1
R932	C-1
RV903	C-2
RV904	D-1
T901	D-1
T902	D-1
TH901	C-2
W901	D-2

VF-129 BOARD (SIDE B)

C901	A-3
C902	A-2
C905	A-3
C908	B-2
C910	C-3
C911	C-3
C912	B-3
C914	D-3
C915	D-3
C916	C-3
CN901	B-3
D903	D-3
L902	B-2
Q901	A-2
Q902	B-2
Q903	C-3
Q904	C-2
R901	A-3
R902	A-2
R904	A-3
R905	A-2
R906	A-2
R911	A-3
R918	C-2
R919	C-2
R920	C-2
R921	D-2
R923	D-3
R924	C-3
R925	C-3
R926	D-2

VF-141 BOARD (SIDE A)

C4501	B-1
C4504	B-1
C4510	B-2
C4515	B-2
C4516	B-2
C4517	A-2
C4521	A-2
C4524	A-2
C4527	B-2
CN4502	A-2
D4501	B-2
D4502	B-2
D4503	A-2
D4504	A-2
FB4505	B-1
IC4502	A-2
L4501	B-1
L4504	B-2
Q4502	A-1
Q4503	A-1
Q4504	B-2
R4505	A-1
R4506	A-1
R4507	A-1
R4508	B-2
R4522	B-2
R4524	A-2
R4525	A-2
R4529	A-2
R4530	A-1
R4534	A-1
R4535	A-1
R4542	A-1
R4543	A-2
R4544	B-1

VF-141 BOARD (SIDE B)

C4503	A-5
C4505	A-5
C4506	A-5
C4507	A-5
C4508	B-5
C4509	B-5
C4511	B-4
C4512	B-4
C4513	A-4
C4514	A-4
C4518	A-4
C4519	A-4
C4520	A-4
C4523	B-4
C4526	A-5
CN4501	A-5
FB4502	A-4
IC4501	A-4
R4515	B-4
R4516	B-4
R4517	B-4
R4518	A-4
R4520	B-4
R4521	B-4
R4523	B-4
R4526	A-4
R4527	A-4
R4528	A-4
R4545	B-4
R4546	B-4
R4547	A-4

LB-062 BOARD (SIDE A)

D4601	B-2
D4602	A-1
ND4601	A-1
R4603	A-2

LB-062 BOARD (SIDE B)

C4601	A-3
C4602	A-3
C4603	A-3
C4604	A-4
CN4601	A-4
IC4601	A-4
L4601	B-3
L4602	B-3
Q4601	A-3
R4601	A-4
R4602	B-3
R4604	A-3
T4601	B-4

CF-077 BOARD (SIDE A)

C001	F-6
D002	F-6
D003	F-3
D004	F-3
D005	F-4
IC001	F-6
R005	E-6
R006	G-4
R010	F-6
R011	E-5
R013	E-6
R014	G-5
R015	G-5
R016	G-6
R017	E-3
R018	E-4
R023	G-4
S001	E-1
S002	E-7
S003	G-6
S004	E-5
S005	G-5
S006	E-8
S007	E-6
S008	G-6
S009	F-2
S010	E-3
S011	F-1

CF-077 BOARD (SIDE B)

BT001	B-6
BZ001	B-2
CN001	B-4
CN002	A-6
RB001	B-3

VC-251 BOARD (SIDE A)

C010	E-8
C020	E-8
C025	D-8
C038	F-7
C040	F-6
C041	F-7
C045	F-7
C046	G-6
C049	G-7
C050	G-6
C051	F-6
C056	F-7
C058	F-7
C061	F-6
C062	F-6
C105	B-5
C108	B-4
C109	B-5
C110	B-5
C111	B-5
C113	B-4
C114	B-5
C115	B-5
C116	B-4
C117	B-5
C118	B-4
C119	B-4
C121	B-5
C122	B-4
C124	B-4
C125	B-5
C126	B-5
C127	B-5
C128	B-4
C129	B-4
C130	B-5
C131	C-5
C132	B-5
C133	B-5
C135	B-4
C136	B-4
C152	D-3
C154	E-2
C156	C-3
C157	C-3
C158	C-3
C160	D-2
C161	C-3
C162	E-3
C163	E-3
C164	E-3
C165	E-3
C166	D-3
C167	D-3
C168	D-3
C169	D-3
C170	C-3
C171	C-3
C172	C-3
C173	C-3
C174	C-3
C175	C-3
C177	C-3
C184	E-3
C185	E-4
C186	C-3
C187	C-4
C188	C-4
C189	E-3
C190	E-4
C192	C-5
C194	C-5
C201	C-3
C223	C-2
C233	B-2
C247	B-2
C248	B-3
C249	C-1
C250	B-1
C252	B-3
C280	F-4
C281	F-4
C286	F-3
C287	F-3
C288	F-3
C289	F-3
C290	F-3
C291	F-4
C292	F-3
C293	F-3
C294	F-3
C295	F-3
C296	F-3
C297	F-4
C301	G-4
C302	G-4
C303	G-3
C304	G-3
C305	G-3
C306	G-3
C307	G-4
C308	G-6
C309	G-4
C310	E-5
C311	F-4
C312	G-3
C313	G-3
C314	F-4
C315	G-3
C316	G-6
C317	F-4
C318	F-4
C319	G-4
C352	B-1
C353	B-1
C354	A-3
C357	B-2
C359	B-3
C361	A-1
C362	A-1
C365	A-2
C366	B-3
C367	A-2
C374	A-3
C403	B-7
C404	B-7
C458	B-8
C459	B-8
C461	B-8
C462	B-8
C503	E-7
C504	E-7
C511	E-7
C512	E-7
C513	C-7
C514	D-8
C515	C-9
C516	C-8
C517	D-8
C519	C-7
C701	C-2
CN001	D-9
CN101	A-4
CN271	F-5
CN301	G-4
CN701	C-2
CN704	A-2
CN706	A-6
CN707	A-7
CN708	E-6
CN709	B-6
CN710	G-7
CN711	C-9
CN712	A-8
CN713	D-6
CN715	D-6
D001	D-8
D002	D-8
D004	D-8
D005	D-8
D301	G-3
D501	E-7
D505	E-7
ET001	G-7
ET002	G-9
ET101	B-5
ET102	B-4
F001	D-9
F002	E-8
F003	E-9
F004	E-8
F005	E-7
FB001	F-7
FB002	F-7
FB003	F-7
FB101	A-4
FB102	A-5
FB154	D-2
FB275	E-4
FB301	G-4
IC101	B-4
IC151	D-4
IC272	F-3
IC301	G-5
IC302	G-4
IC503	D-7
L001	G-8
L002	F-8
L004	G-8
L005	G-9
L006	F-9
L007	G-8
L008	G-7
L009	F-7
L010	F-7
L012	F-7
L013	G-7
L014	G-7
L016	F-7
L151	D-2
L154	F-3
L271	E-4
L301	G-6
L303	F-4
L705	D-1
Q001	E-7
Q002	E-9
Q003	E-8
Q004	E-8
Q101	A-5
Q102	B-5
Q103	B-5
Q104	B-5
Q152	E-3
Q153	E-3
Q154	D-3
Q155	D-3
Q156	D-3
Q157	D-3
Q158	E-2
Q301	G-3
Q302	G-5
Q303	F-3
Q701	E-6
R003	D-8
R008	E-8
R010	E-8
R013	E-8
R017	E-8
R018	E-8
R022	E-7
R052	E-8
R101	A-5
R102	A-5
R105	B-5
R107	B-5
R108	B-5
R112	B-5
R113	B-5
R115	B-5
R116	B-4
R117	B-5
R118	B-4
R120	B-5
R121	B-4
R122	B-4
R154	C-3
R155	C-3
R156	E-2
R157	E-2
R158	D-2
R159	D-2
R160	D-2
R161	D-2
R162	E-2
R163	E-2
R164	D-2
R165	D-2
R166	D-2
R167	D-2
R169	C-3
R170	C-3
R171	C-3
R173	C-3
R174	C-3
R176	C-3
R177	E-3
R178	E-2
R179	E-2
R180	E-3
R181	E-3
R182	E-3
R183	E-3
R184	E-3
R185	D-3
R186	D-3
R187	D-3
R188	D-3
R189	D-3
R190	D-3
R191	D-3
R192	D-3
R193	C-3
R197	E-3
R198	E-3
R199	C-4
R200	C-4
R204	E-2
R206	C-4
R208	C-5
R218	C-4
R229	D-1
R301	G-4
R302	G-4
R304	G-3
R306	G-3
R307	G-4
R308	G-4
R309	G-3
R310	G-3
R311	G-4
R312	G-3
R313	G-4
R314	G-4
R316	G-4
R317	G-4
R318	F-4
R319	F-3
R321	F-3
R322	F-3
R323	G-3
R354	A-1
R355	A-1
R358	A-1
R359	A-1
R402	B-7
R451	D-8
R452	E-8
R455	A-7
R457	A-8
R513	D-7
R516	C-7
R518	E-7
R519	E-7
R520	E-7
R521	E-7
R525	C-8
R542	C-8
R543	C-7
R544	C-8
R552	C-8
R554	D-8
R558	D-8
R709	D-6
R710	D-6
R711	G-7
R712	F-6
R713	C-2
RB101	B-5
RB221	C-1
RB222	D-1
RB223	D-1
RB272	F-3
RB302	G-3
RB510	D-8
RB512	C-7
RB514	D-7
T001	F-8
X501	C-7
X502	C-8

VC-251 BOARD (SIDE B)

C001	E-12	C283	F-16	C518	D-10	Q353	A-18	R401	B-12
C002	E-12	C284	E-14	C601	D-15	Q354	A-17	R403	C-11
C003	E-12	C285	E-15	C602	D-15	Q355	A-18	R404	C-12
C004	E-12	C351	B-18	C603	D-16	Q451	A-11	R408	C-12
C005	E-12	C355	B-17	C707	E-17	Q501	D-10	R411	C-12
C008	E-12	C356	B-17	C708	E-18	Q702	E-18	R417	B-13
C009	E-12	C358	B-17			Q703	E-17	R420	B-13
C011	E-11	C363	A-18	CN702	E-18	Q704	D-18	R423	B-13
C012	E-13	C364	B-17	CN703	B-18	Q705	D-18	R428	B-13
C013	E-11	C368	B-17	CN714	C-10			R430	C-13
C014	E-13	C369	A-17			R001	E-12	R431	B-13
C015	E-11	C371	A-17	D006	F-12	R002	E-12	R432	C-13
C016	F-11	C372	A-17	D007	F-11	R004	E-11	R433	B-13
C017	E-11	C373	A-17	D010	F-12	R006	E-13	R434	A-12
C018	F-13	C375	B-17	D151	C-16	R007	E-12	R458	B-11
C019	F-13	C376	A-17	D152	C-16	R009	E-13	R459	B-11
C021	F-12	C377	A-17	D271	F-15	R011	E-11	R460	B-11
C022	F-12	C378	A-17	D272	E-16	R012	E-13	R461	B-10
C023	F-12	C379	A-17	D451	B-10	R014	E-11	R462	C-10
C024	F-12	C380	B-17	D503	E-10	R016	E-13	R464	A-12
C026	G-11	C381	A-17	D504	D-11	R020	E-11	R465	A-12
C027	G-11	C382	B-17	D702	D-18	R021	E-11	R466	B-10
C028	G-10	C383	A-16	D703	F-18	R023	E-11	R467	B-10
C029	F-10	C384	A-16			R025	F-10	R468	B-11
C030	G-11	C385	B-16	FB152	E-16	R026	F-11	R469	A-11
C031	F-11	C386	A-16	FB153	E-14	R027	F-11	R470	B-10
C032	G-11	C387	B-16	FB221	C-18	R028	G-12	R471	A-11
C033	G-11	C388	B-16	FB271	F-15	R029	F-11	R472	A-11
C034	F-11	C389	A-16	FB273	F-16	R030	G-12	R474	A-10
C035	F-10	C390	B-16	FB274	F-16	R031	G-12	R480	A-10
C036	F-10	C391	B-16	FB276	F-16	R032	G-12	R481	A-11
C037	G-11	C392	B-16	FB601	D-16	R033	F-10	R501	D-10
C039	G-11	C393	B-16			R034	F-11	R502	E-10
C042	G-12	C394	A-16	IC001	E-12	R035	G-13	R503	E-10
C043	F-12	C395	B-16	IC153	E-14	R036	G-12	R504	D-10
C047	G-12	C396	B-16	IC221	C-18	R037	G-12	R531	C-12
C048	F-12	C397	B-16	IC271	F-15	R038	G-13	R547	C-11
C052	F-10	C398	B-17	IC351	B-17	R039	G-12	R559	D-11
C053	G-13	C401	C-11	IC401	C-11	R040	G-12	R611	B-13
C054	G-13	C402	B-12	IC402	B-12	R041	G-13	R612	B-13
C055	G-12	C405	C-12	IC451	B-11	R042	G-12	R613	C-13
C057	F-13	C406	C-13	IC502	E-11	R043	G-12	R614	B-13
C059	F-10	C407	C-13	IC504	E-11	R044	G-12	R701	E-17
C060	E-12	C408	B-13	IC601	D-15	R045	G-12	R702	E-17
C071	F-13	C409	A-13			R046	G-12	R703	E-17
C072	F-13	C410	B-13	L003	G-11	R047	F-12	R704	D-18
C101	A-14	C411	B-13	L011	G-11	R048	G-12	R705	D-17
C102	A-15	C451	B-11	L101	A-15	R049	F-12	R706	D-18
C103	A-15	C452	B-11	L102	B-14	R050	G-13	R707	D-18
C104	B-14	C453	B-11	L103	B-15	R051	G-13	R708	D-18
C106	B-15	C454	B-11	L104	B-14	R071	F-13		
C107	B-14	C455	B-11	L152	E-16	R072	F-13	RB102	B-14
C112	B-14	C456	B-11	L155	C-16	R073	F-12	RB151	C-15
C123	B-14	C457	B-11	L156	C-16	R074	F-13	RB273	F-16
C134	B-14	C460	A-12	L221	C-17	R106	B-14	RB351	A-17
C151	C-16	C463	B-11	L224	C-18	R109	B-15	RB352	A-17
C155	C-15	C464	A-11	L272	F-16	R110	B-15	RB401	A-12
C176	D-16	C465	B-10	L601	D-15	R111	B-14	RB402	C-13
C178	C-16	C466	B-10			R123	B-15	RB404	B-13
C179	C-16	C467	B-11	Q006	G-11	R124	B-15	RB405	B-13
C182	C-16	C468	B-10	Q007	F-11	R168	D-15	RB406	B-13
C183	C-16	C469	B-11	Q008	F-11	R172	C-15	RB407	A-13
C195	D-14	C470	B-10	Q009	G-10	R175	C-16	RB451	A-12
C196	E-14	C471	B-11	Q010	G-11	R195	C-16	RB452	A-11
C221	C-18	C472	B-10	Q011	G-10	R196	C-15	RB501	D-12
C225	C-17	C473	B-10	Q012	F-10	R226	D-17	RB502	D-12
C226	C-17	C474	A-11	Q013	G-11	R232	D-17	RB503	D-12
C227	C-17	C475	A-10	Q014	F-11	R271	F-15	RB504	D-12
C228	C-17	C476	A-10	Q015	F-10	R274	F-14	RB505	D-12
C231	D-18	C477	A-11	Q016	F-10	R275	F-15	RB506	D-12
C234	C-17	C478	A-11	Q018	G-12	R279	F-16	RB507	D-12
C235	D-17	C479	A-11	Q019	G-13	R280	E-15	RB508	E-12
C236	C-17	C480	A-11	Q020	G-12	R281	E-16	RB509	E-11
C238	C-18	C481	A-11	Q021	G-12	R351	B-18	RB511	D-11
C246	C-18	C482	A-11	Q022	G-13	R352	B-17	RB513	C-11
C251	C-18	C483	A-11	Q023	G-12	R353	B-17		
C271	F-15	C484	A-11	Q026	F-13	R356	B-17	VDR701	E-18
C272	F-15	C485	B-11	Q027	F-12	R363	B-18	VDR702	E-18
C273	F-15	C501	E-11	Q071	F-13	R364	A-18	VDR703	E-18
C274	F-15	C502	E-11	Q072	F-13	R368	B-17	VDR704	E-18
C275	F-15	C505	E-12	Q105	B-14	R372	B-17	VDR706	E-18
C276	F-15	C506	E-12	Q106	B-15	R373	A-16	VDR707	E-18
C277	F-15	C507	E-12	Q107	B-14	R374	B-16		
C278	F-15	C508	E-12	Q151	C-15	R379	B-16	X271	E-16
C279	F-15	C509	E-12	Q351	A-18	R381	E-18	X401	B-12
C282	F-15	C510	E-12	Q352	A-18	R382	E-18		

SECTION 5

ADJUSTMENTS

1. Before starting adjustment

1-1. Adjusting items when replacing main parts and boards.

When replacing main parts, adjust the items indicated by ● in the following table.

Adjustment Section	Adjustment	Replaced parts																									
		Block replacement									Parts replacement																
		Lens device	Video light *8	LCD block ND901 (Fluorescent tube) *4	LCD block LCD901 (LCD panel) *4	B/W EVF block V901 (Picture tube) *3	Color EVF block LCD903 (LCD panel) *2	Mechanism deck *1	Mechanism deck M901 (Drum assy.) *1	Mechanism deck M902 (Capstan motor)	CD-286/281 board IC191 (CCD imager)	VC-251 board IC271, X271 (Timing generator)	VC-251 board IC272 (S/H, AGC)	VC-251 board IC151 (Camera, video process)	VC-251 board IC101 (REC/PB AMP)	VC-251 board IC221 (Video out)	VC-251 board IC601 (EVR)	VC-251 board IC351 (Audio process)	MI-040/041 board SE751,752 (PITCH,YAW sensor) *6	MI-040/041 board IC3901 (IR transmitter) *5	PD-131 board IC5501 (RGB driver (LCD)) *4	PD-131 board IC5502 (Timing generator (LCD)) *4	VF-129 board IC901 (CRT drive (EVF)) *3	VF-129 board T901 (FBT (EVF)) *3	VF-141 board IC4501 (RGB driver (EVF)) *2	VF-141 board IC4502 (Timing generator (EVF)) *2	LB-62 board ND4601 (Fluorescent tube (EVF)) *2
Initialization of D, E, F, 7 page data	Initialization of D, E, F, 7 page data																										
	Modification of D, E, F, 7 page data																										
Camera	Lens type input	●																									
	HALL adj.	●																									
	Flange back adj.	●									●																
	Color reproduction adj.										●		●														
	AWB & LV standard data input										●		●														
	Auto white balance adj.										●		●														
	Angular velocity sensor sens. adj. *6																		●								
Color EVF *2	VCO adj.																									●	
	RGB AMP adj.																								●		
	Contrast adj.																								●		
	Backlight consumption current adj.																										●
	White balance adj.						●																		●		●
B/W EVF *3	Centering adj.					●																	●	●			
	Focus adj.					●																	●	●			
	Aberration adj.					●																	●	●			
	Horizontal amplitude adj.					●																	●	●			
	Vertical amplitude adj.					●																	●	●			
	Brightness adj.					●																	●	●			
LCD *4	VCO adj.																					●					
	RGB AMP adj.																				●						
	Contrast adj.																				●						
	COM-AMP adj.																				●						
	V-COM adj.				●																●						
	White balance adj.			●	●																●						
Servo	CAP FG offset adj.							●		●																	
	Switching position adj.							●	●																		
Video	28MHz origin oscillation adj.											●					●										
	AFC fo adj.													●													
	Filter fo adj.															●											
	Y OUT level adj.													●		●											
	C OUT level adj.													●		●											
	REC Y current adj.													●	●												
	REC C/AFM current adj.													●	●												
IR *5	IR video carrier frequency adj.															●				●							
	IR video deviation adj.															●				●							
	IR audio deviation adj.																	●		●							
Audio	1.5MHz deviation adj.																	●									
	BPF fo adj.																	●									
Mechanism	Tape path adj.							●	●	●																	

Table. 5-1-1(1).

Adjustment Section	Adjustment	Board replacement					EEPROM
		VC-251 board (COMPLETE)	MI-040/041 board (COMPLETE) *7	PD-131 board (COMPLETE) *4	VF-129 board (COMPLETE) *3	VF-141 board (COMPLETE) *2	VC-251 board IC4502
Initialization of D, E, F, 7 page data	Initialization of D, E, F, 7 page data						●
	Modification of D, E, F, 7 page data	●					●
Camera	Lens type input	●					●
	HALL adj.	●					●
	Flange back adj.	●					●
	Color reproduction adj.	●					●
	AWB & LV standard data input	●					●
	Auto white balance adj.	●					●
	Angular velocity sensor sens. adj. *6	●	●				●
Color EVF *2	VCO adj.	●				●	●
	RGB AMP adj.	●				●	●
	Contrast adj.	●				●	●
	Backlight consumption current adj.	●				●	●
	White balance adj.	●				●	●
B/W EVF *3	Centering adj.				●		
	Focus adj.				●		
	Aberration adj.				●		
	Horizontal amplitude adj.				●		
	Vertical amplitude adj.				●		
	Brightness adj.				●		
LCD *4	VCO adj.	●		●			●
	RGB AMP adj.	●		●			●
	Contrast adj.	●		●			●
	COM-AMP adj.	●		●			●
	V-COM adj.	●		●			●
	White balance adj.	●		●			●
Servo	CAP FG offsett adj.	●					●
	Switching position adj.	●					●
Video	28MHz origin oscillation adj.						●
	AFC fo adj.						●
	Filter fo adj.						●
	Y OUT level adj.						●
	C OUT level adj.						●
	REC Y current adj.						●
	REC C/AFM current adj.						●
IR *5	IR video carrier frequency adj.		●				●
	IR video deviation adj.		●				●
	IR audio deviation adj.		●				●
Audio	1.5MHz deviation adj.						●
	BPF fo adj.						●
Mechanism	Tape path adj.						

Table. 5-1-1(2).

*1: When replacing the drum assy. or mechanism deck, reset the data of page: 2, address: A2 to A4 to "00". (Refer to "Record of Use check" of "5-4. SERVICE MODE")

*2: Color EVF model (CCD-TR818)

*3: B/W EVF model (CCD-TR618/TR618E/TR718E/TR728E/TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)

*4: TRV model: (CCD-TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)

*5: LASER LINK model (CCD-TRV98)

*6: Steady shot model (CCD-TR818/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)

*7: MI-040 board: TR model
MI-041 board: TRV model

*8: When replacing the video light, reset the data of page: 2, address: E0 to E2 to "00". (Except for CCD-TR818)

5-1. CAMERA SECTION ADJUSTMENT

1-1. PREPARATIONS BEFORE ADJUSTMENT (CAMERA SECTION)

1-1-1. List of Service Tools

- Oscilloscope
- Regulated power supply
- Color monitor
- Digital voltmeter
- Vectorscope

Ref. No.	Name	Parts Code	Usage
J-1	Filter for color temperature correction (C14)	J-6080-058-A	Auto white balance adjustment/check White balance adjustment/check
J-2	ND filter 1.0	J-6080-808-A	White balance check
	ND filter 0.4	J-6080-806-A	White balance check
	ND filter 0.1	J-6080-807-A	White balance check
J-3	Pattern box PTB-450	J-6082-200-A	
J-4	Color chart for pattern box	J-6020-250-A	
J-5	Adjustment remote commander (RM-95 upgraded) (Note)	J-6082-053-B	
J-6	Siemens star chart	J-6080-875-A	For checking the flange back
J-7	Clear chart for pattern box	J-6080-621-A	
J-8	Multi CPC jig	J-6082-311-A	For adjusting the LCD block
J-9	CPC jig for BX/BK	J-6082-521-A	For connecting the adjustment remote commander
J-10	IR receiver jig	J-6082-383-A	For adjusting the IR transmitter
J-11	Minipattern box	J-6082-353-B	For adjusting the flange back
J-12	Camera base	J-6082-384-A	For adjusting the flange back

Note: If the micro processor IC in the adjustment remote commander is not the new micro processor (UPD7503G-C56-12), the pages cannot be switched. In this case, replace with the new micro processor (8-759-148-35).

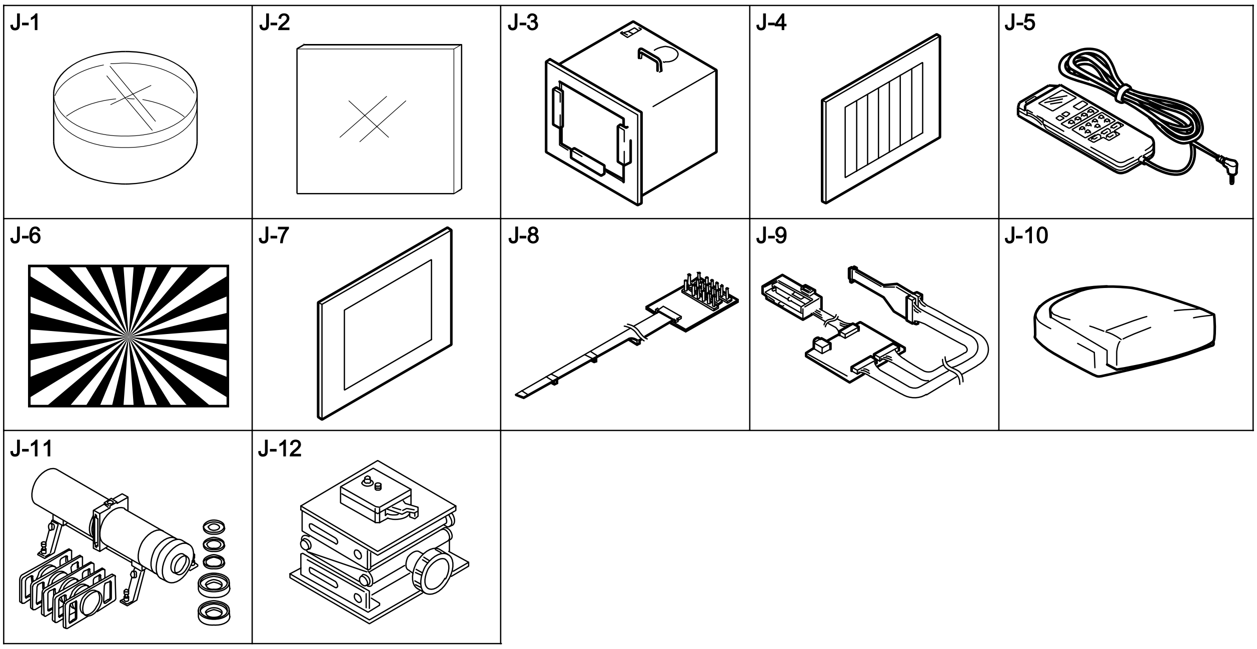


Fig. 5-1-1.

1-1-2. Preparations

Note1: For details of how remove the cabinet and boards, refer to "2. DISASSEMBLY".

Note2: When performing only the adjustments, the lens block and boards need not be disassembled.

Note3: CF-077 board, MI-040 board: TR model
CF-1000 block, MI-041 board: TRV model
TR model: CCD-TR618/TR618E/TR718E/TR728E/TR818
TRV model: CCD-TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E

1) Connect the equipment for adjustments according to Fig. 5-1-4, 5-1-5.
2) Connect the adjustment remote commander to CN713 of VC-251 board or CPC connector of FP-262 flexible via CPC jig for BX/BK (J-6082-521-A). To operate the adjustment remote commander, connect the AC power adapter to the DC IN jack of CPC jig for BX/BK, or connect the L series Info-LITHIUM battery to the battery terminal of CPC jig for BX/BK. (Fig. 5-1-3.)
3) The front panel block (MI-040/041 board, microphone unit, video light) need not be assembled except during the steady shot operation check.

Note4: As removing the cabinet (R) (removing the VC-251 board CN709) means removing the lithium 3V power supply (CF-1000 block/CF-077 board BT101), data such as date, time, user-set menus will be lost. After completing adjustments, reset these data. If the cabinet (R) has been removed, the self-diagnosis data, data on history of use (total drum rotation time etc.) will be lost. Before removing, note down the self-diagnosis data (data of page: 2, address: B0 to C6 and E0 to E2) and data on history use (data of page: 2, address: A2 to AA). (Refer to "5-4. Service Mode" for the self-diagnosis data and data on the history use.)

Note5: Setting the "Forced Camera Power ON" Mode
1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 10, set data: 01, and press the PAUSE button.

The above procedure will enable the camera power to be turned on with the SS-1000 block removed. After completing adjustments, be sure to exit the "Forced Camera Power ON Mode".

Note6: Exiting the "Forced Camera Power ON" Mode
1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 10, set data: 00, and press the PAUSE button.
3) Select page: 0, address: 01, and set data: 00.

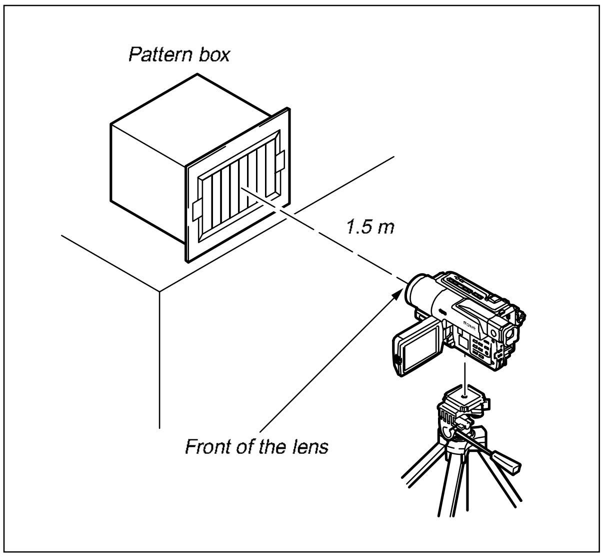
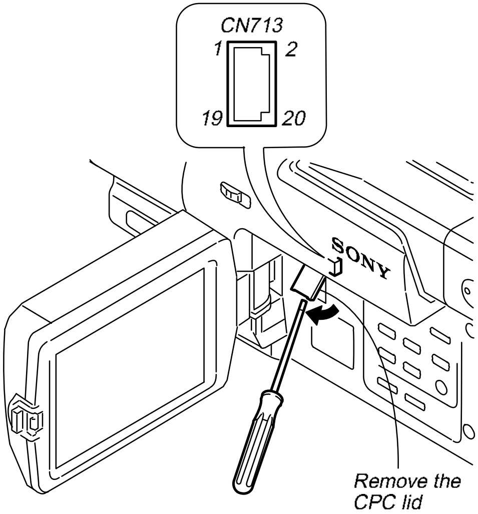


Fig. 5-1-2.

[TRV model]



[TR model]

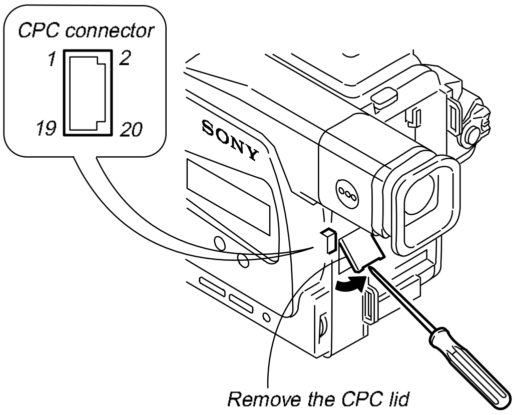
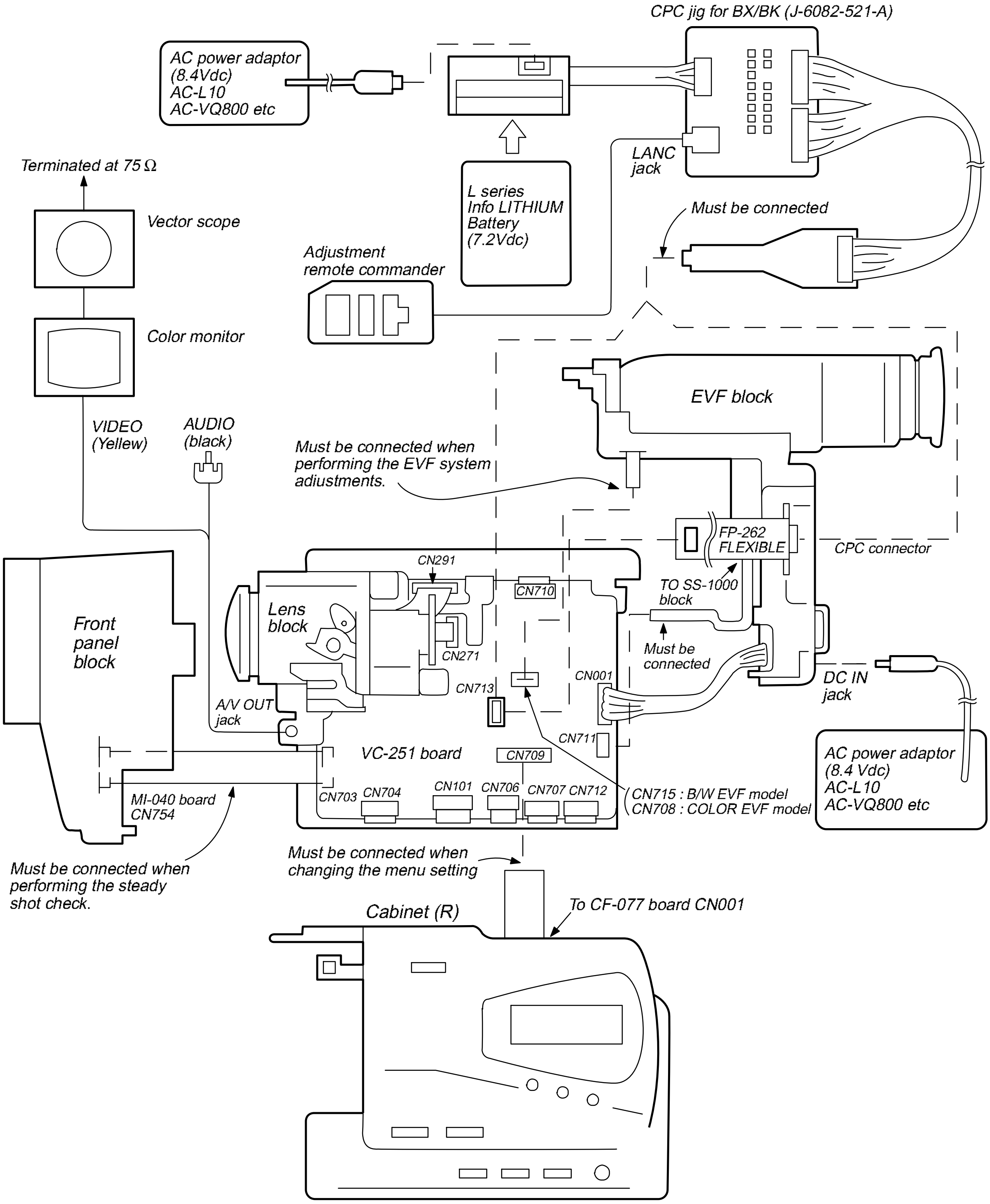


Fig. 5-1-3.

TR model (CCD-TR618/TR618E/TR718E/TR728E/TR818)

Note: Use either a AC power adaptor or a Info-LITHIUM battery as the power supply of the CPC jig for BX/BK.



CPC jig for BX/BK (J-6082-521-A)
AC power adaptor (8.4Vdc) AC-L10 AC-VQ800 etc
LANC jack
Terminated at 75 Ω
L series Info LITHIUM Battery (7.2Vdc)
Vector scope
Must be connected
Adjustment remote commander
Color monitor
EVF block
VIDEO (Yellew)
AUDIO (black)
Must be connected when performing the EVF system adiustments.
FP-262 FLEXIBLE
CPC connector
CN291
CN710
TO SS-1000 block
Front panel block
Lens block
Must be connected
CN271
CN001
DC IN jack
CN713
A/V OUT jack
CN711
VC-251 board
CN709
AC power adaptor (8.4 Vdc) AC-L10 AC-VQ800 etc
CN101
CN706
CN707
CN712
CN715 : B/W EVF model
CN708 : COLOR EVF model
MI-040 board CN754
CN703
CN704
Must be connected when changing the menu setting
Must be connected when performing the steady shot check.
Cabinet (R)
To CF-077 board CN001

Fig. 5-1-4.

TRV model (CCD-TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)

Note: Use either a AC power adaptor or a Info-LITHIUM battery as the power supply of the CPC jig for BX/BK.

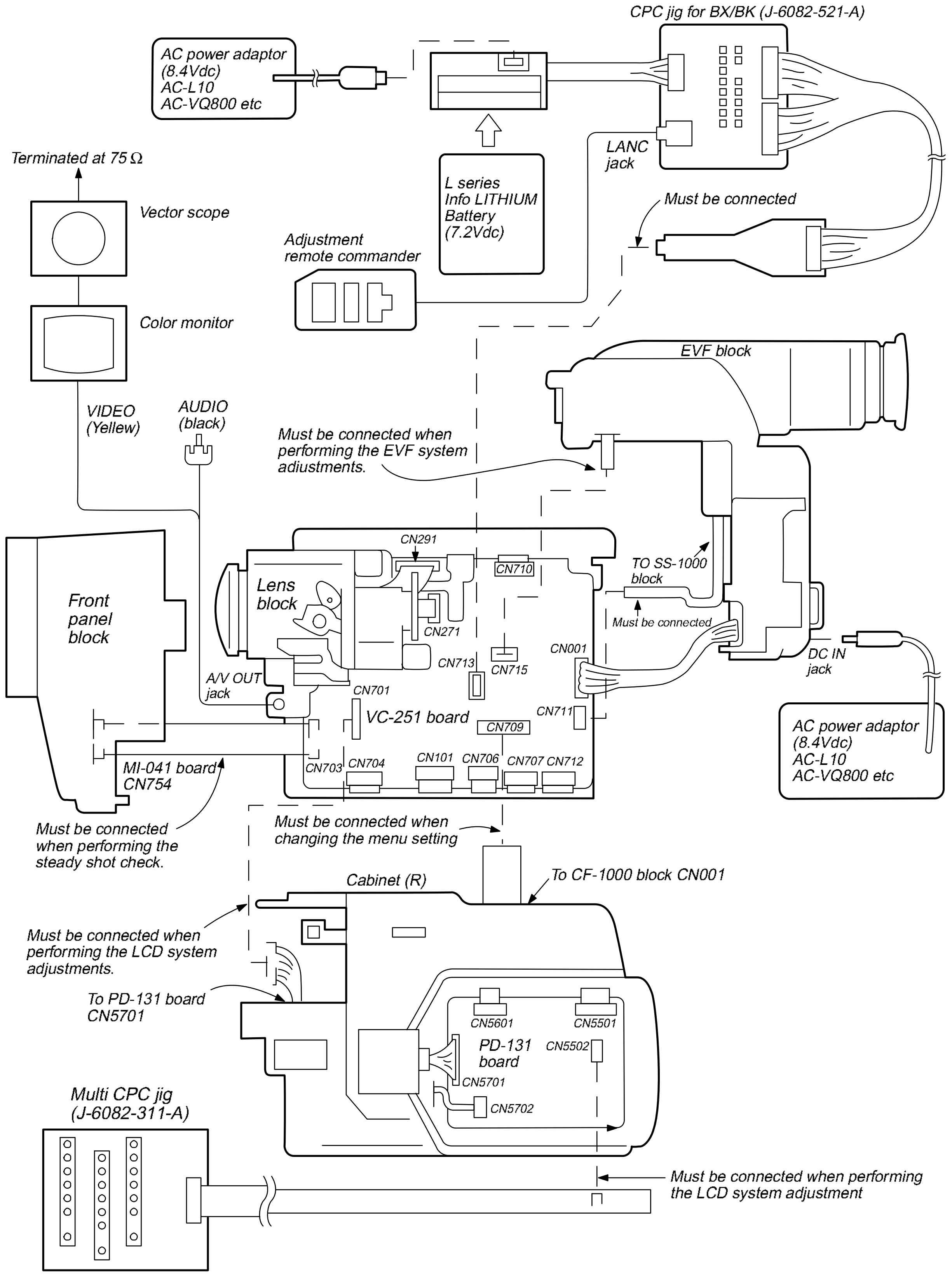

CPC jig for BX/BK (J-6082-521-A)
AC power adaptor
(8.4Vdc)
AC-L10
AC-VQ800 etc
Terminated at 75 Ω
L series
Info LITHIUM
Battery
(7.2Vdc)
LANC
jack
Must be connected
Vector scope
Adjustment
remote commander
Color monitor
EVF block
VIDEO
(Yellow)
AUDIO
(black)
Must be connected when
performing the EVF system
adjustments.
CN291
CN710
TO SS-1000
block
Lens
block
Front
panel
block
Must be connected
CN271
CN001
DC IN
jack
CN713
CN715
A/V OUT
jack
CN701
CN711
VC-251 board
CN709
AC power adaptor
(8.4Vdc)
AC-L10
AC-VQ800 etc
MI-041 board
CN754
CN703
CN704
CN101
CN706
CN707
CN712
Must be connected
when performing the
steady shot check.
Must be connected when
changing the menu setting
Cabinet (R)
To CF-1000 block CN001
Must be connected when
performing the LCD system
adjustments.
To PD-131 board
CN5701
CN5601
CN5501
PD-131
board
CN5502
CN5701
CN5702
Multi CPC jig
(J-6082-311-A)
Must be connected when performing
the LCD system adjustment

Fig. 5-1-5.

1-1-3. Precaution

1. Setting the Switch

Unless otherwise specified, set the switches as follows and perform adjustments without loading cassette.

1. POWER switch (SS-1000 block) .... CAMERA
2. NIGHT SHOT switch (Lens block) .... OFF
3. LIGHT switch (FK-1000 block) *1 .... OFF
4. DEMO MODE (Menu display) .... OFF
5. DIGITAL ZOOM (Menu display) .... OFF
6. STEADY SHOT (Menu display) *2 .... OFF
7. DISPLAY (Menu display) *3 .... V-OUT/LCD
8. DISPLAY (CF-1000 block) *3 .... ON
9. FOCUS switch (CF-1000 block/CF-077 board) ... MANUAL
10. BACK LIGHT (CF-1000 block/CF-077 board) ....OFF
11. PROGRAM AE (Menu display) ....OFF
12. PICTURE EFFECT (Menu display) ....OFF
13. 16 : 9 WIDE (MENU display) ....OFF

*1: Video light model (CCD-TR618/TR618E/TR718E/TR728E/TR818/TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)

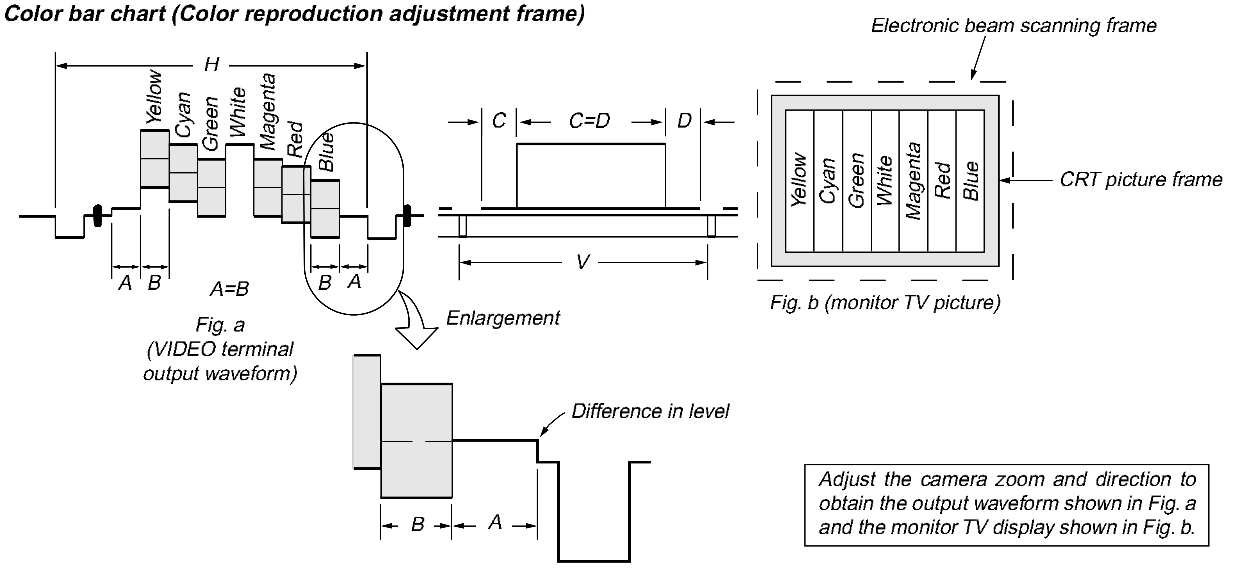
*2: Steady shot model (CCD-TR818/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)

*3: TRV model (CCD-TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)

2. Order of Adjustments

Basically carry out adjustments in the order given.

Color bar chart (Color reproduction adjustment frame)


H
Yellow
Cyan
Green
White
Magenta
Red
Blue
A
B
A=B
B
A
Fig. a
(VIDEO terminal
output waveform)
Enlargement
C
C=D
D
V
Difference in level
B
A
Electronic beam scanning frame
Yellow
Cyan
Green
White
Magenta
Red
Blue
CRT picture frame
Fig. b (monitor TV picture)

Adjust the camera zoom and direction to obtain the output waveform shown in Fig. a and the monitor TV display shown in Fig. b.

Fig.5-1-6.

3. Subjects

1) Color bar chart (Color reproduction adjustment frame)
   When performing adjustments using the color bar chart, adjust the picture frame as shown in Fig. 5-1-6. (Color reproduction adjustment frame)
2) Clear chart (Color reproduction adjustment frame)
   Remove the color bar chart from the pattern box and insert a clear chart in its place. (Do not perform zoom operations during this time.)
3) Flange back adjustment chart
   Make the chart shown in Fig. 5-1-7 using A0 size (1189mm × 841mm) black and white vellum paper.

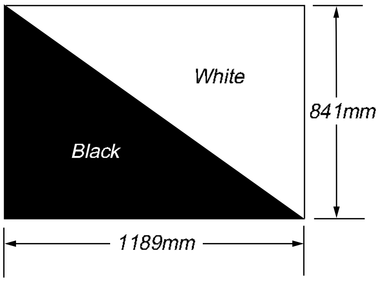

White
Black
841mm
1189mm

Fig. 5-1-7.

Note: Use matte vellum paper bigger than A0, and make sure the edges of the black and white paper joined together are not rough.

1-2. INITIALIZATION OF D, E, F, 7 PAGE DATA

1. Initializing the D, E, F, 7 Page Data

Note1: If "Initializing the D, E, F, 7 Page Data" is performed, all data of the D page, E page, F page and 7 page will be initialized. (It is impossible to initialize a single page.)

Note2: If the D, E, F, 7 page data has been initialized, "Modification of D, E, F, 7 Page Data" and all adjustments need to be performed again.

Adjustment page	D
Adjustment Address	10 to FF
Adjustment page	F
Adjustment Address	10 to FF
Adjustment page	E
Adjustment Address	00 to FF
Adjustment page	7
Adjustment Address	00 to FF

Note: NTSC model: CCD-TR618/TR818/TRV49/TRV58/TRV68/
TRV78/TRV88/TRV98
PAL model: CCD-TR618E/TR718E/TR728E/TRV49E/TRV58E/
TRV59E/TRV78E/TRV98E

Initializing Method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	6	00		Set the following data. 55: NTSC model 51: PAL model
3	6	01		Set the following data, and press PAUSE button. 55: NTSC model 51: PAL model
4	6	02		Check that the data changes to "01".
5	2	00	29	Set the data
6	2	01	29	Set the data, and press PAUSE button.
7				Perform "Modification of D, E, F, 7 Page Data".

2. Modification of D, E, F, 7 Page Data

If the D, E, F, 7 page data has been initialized, change the data of the "Fixed data-2" address shown in the following tables by manual input.

Modifying Method:

1) Before changing the data, select page: 0, address: 01, and set data: 01.
2) New data for changing are not shown in the tables because they are different in destination. When changing the data, copy the data built in the same model.
   Note: If copy the data built in the different model, the camcorder may not operate.
3) When changing the data, press the PAUSE button of the adjustment remote commander each time when setting new data to write the data in the non-volatile memory.
4) Check that the data of adjustment addresses is the initial value. If not, change the data to the initial value.

Processing after Completing Modification of D, E, F, 7 Page data

Order	Page	Address	Data	Procedure
1	2	00	29	Set the data
2	2	01	29	Set the data, and press PAUSE button.

Note: If the following symptoms occur after completing of the "Modification of D, E, F, 7 page data", check that the data of the "Fixed data-2" addresses of D page are same as those of the same model of the same destination.
1) The battery end mark on the LCD or viewfinder screen is flashing.
2) The power is shut off so that unit cannot operate.

3. D Page Table

Note1: Fixed data-1: Initialized data. (Refer to "1. Initializing the D, E, F, 7 Page Data".)
Fixed data-1: Modified data. (Refer to "2. Modification of D, E, F, 7 Page Data".)

Address	Initial value		Remark
	NTSC	PAL	
00 to 0F			
10	00	00	Test mode
11 to 12			Fixed data-1
13			Fixed data-2
14			Fixed data-1
15			Fixed data-2
16 to 19			Fixed data-1
1A			Fixed data-2
1B to 1E			Fixed data-1
1F			Fixed data-2 (Modified data. Copy the data built in the same model.)
20			
21			
22			
23			
24 to 26			Fixed data-1
27			Fixed data-2
28 to 2C			Fixed data-1
2D			Fixed data-2 (Modified data. Copy the data built in the same model.)
2E			
2F			
30			
31 to 3F			Fixed data-1
40			Fixed data-2 (Modified data. Copy the data built in the same model.)
41			
42			
43			
44			
45			
46 to 47			Fixed data-1
48			Fixed data-2
49			
4A to 4C			Fixed data-1
4D			Fixed data-2
4E			
4F			Fixed data-1
50			Fixed data-2 (Modified data. Copy the data built in the same model.)
51			
52			

Address	Initial value		Remark
	NTSC	PAL	
53			Fixed data-1
54			Fixed data-2
55 to 57			Fixed data-1
58			Fixed data-2 (Modified data. Copy the data built in the same model.)
59			
5A			
5B			
5C			
5D to 63			Fixed data-1
64			Fixed data-2 (Modified data. Copy the data built in the same model.)
65			
66			
67			
68			
69 to 87			Fixed data-1
88			Fixed data-2 (Modified data. Copy the data built in the same model.)
89			
8A			
8B			
8C to FF			Fixed data-1

Table. 5-1-2.

4. F Page table

Note1: Fixed data-1: Initialized data. (Refer to “1. Initializing the D, E, F, 7 Page Data”.)
Fixed data-2: Modified data. (Refer to “2. Modification of D, E, F, 7 Page Data”.)

Address	Initial value		Remark
	NTSC	PAL	
00 to 0F			
10	00	00	Emergency memory address
11	00	00	
12	00	00	
13	00	00	
14	00	00	
15	00	00	
16	00	00	
17	00	00	
18	00	00	
19	00	00	
1A	00	00	
1B	00	00	
1C			Fixed data-1
1D			Fixed data-2
1E to 22			Fixed data-1
23			Fixed data-2
24			
25			Fixed data-1
26			Fixed data-2
27 to 2B			Fixed data-1
2C	D7	D7	Lens type input
2D to 32			Fixed data-1
33			Fixed data-2
34 to 37			Fixed data-1
38	68	68	HALL adj.
39	80	80	
3A	8D	8D	
3B			Fixed data-2
3C	80	80	AWB & LV standard data input
3D	7A	7A	
3E	2B	2B	
3F	80	80	
40	65	65	
41	80	80	
42	8D	8D	Auto white balance adj.
43	87	87	
44 to 46			Fixed data-1
47	33	33	Color reproduction adj.
48			Fixed data-1
49	34	34	Color reproduction adj.
4A			Fixed data-1 (Initialized data)
4B			
4C			
4D	8C	8C	28MHz origin osc. Adj.
4E	28	28	Flange back adj.
4F	07	07	
50	3A	3A	
51	4A	4A	
52	12	12	

Address	Initial value		Remark
	NTSC	PAL	
53	0B	0B	Flange back adj.
54	54	54	
55	00	00	
56	19	19	
57	00	00	
58	37	37	
59	00	00	
5A	00	00	
5B	04	04	
5C	00	00	
5D	00	00	
5E	5A	74	Angular velocity sensor sens. adj. *1
5F	57	5D	
60			Fixed data-1
61	00	00	Flange back adj.
62	0A	0A	Switching position adj.
63	00	00	
64	83	83	CAP FG offset adj.
65	50	50	AFC fo adj.
66	77	77	Filter fo adj.
67	62	62	Y OUT level adj.
68	62	62	C OUT level adj.
69			Fixed data-1
6A	B4	D7	REC Y current adj.
6B	B4	D7	
6C to 70			Fixed data-1
71	A0	A0	REC C/AFM current adj.
72 to 7A			Fixed data-1
7B	A6	A6	1.5MHz deviation adj.
7C			Fixed data-1
7D	80	80	BPF fo adj.
7E	41	41	IR video deviation Adj. *2
7F	33	33	IR audio deviation Adj. *2
80	C7	C7	IR video carrier freq. Adj. *2
81 to 89			Fixed data-1
8A			Fixed data-2
8B to 8D			Fixed data-1
8E			Fixed data-2
8F			
90 to 99			Fixed data-1
9A			Fixed data-2
9B to 9F			Fixed data-1
A0			Fixed data-2
A1 to B7			Fixed data-1
B8			Fixed data-2 (Modified data. Copy the data built in the same model.)
B9			
BA			
BB			
BC to CC			Fixed data-1
CD			Fixed data-2
CE to D3			Fixed data-1
D4			Fixed data-2
D5 to D6			Fixed data-1

Address	Initial value		Remark
	NTSC	PAL	
D7	FD	FC	Color reproduction adj.
D8	F4	F2	
D9	0F	11	
DA	31	33	
DB to DD			Fixed data-1
DE			Fixed data-2
DF			
F0 to F2			Fixed data-1
F3			Fixed data-2
F4			
F5			Fixed data-1
F6			Fixed data-2
F7 to FF			Fixed data-1

*1: Steady shot model (CCD-TR818/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)

*2: LASER LINK model (CCD-TRV98)

Table. 5-1-3.

5. E Page Table

Note: Fixed data-1: Initialized data. (Refer to “1. Initializing the D, E, F, 7 Page Data”.)
Fixed data-2: Modified data. (Refer to “2. Modification of D, E, F, 7 Page Data”.)

Address	Initial value		Remark
	NTSC	PAL	
00 to 01			Fixed data-1
02			Fixed data-2 (Modified data. Copy the data built in the same model.)
03			
04			
05			
06			
07			Fixed data-1
08			Fixed data-2
09			
0A to 0E			Fixed data-1
0F			Fixed data-2 (Modified data. Copy the data built in the same model.)
10			
11			
12			
13			
14			
15 to 17			Fixed data-1
18			Fixed data-2
19			
1A to 27			Fixed data-1
28			Fixed data-2
29 to 2F			Fixed data-1
30			Fixed data-2
31 to 33			Fixed data-1
34			Fixed data-2
35			Fixed data-1
36			Fixed data-2
37			Fixed data-1
38			Fixed data-2
39			
3A			Fixed data-1
3B			Fixed data-2
3C			
3D to 50			Fixed data-1
51			Fixed data-2
52 to 53			Fixed data-1
54			Fixed data-2
55			
56			Fixed data-1
57			Fixed data-2
58			Fixed data-1
59			Fixed data-2
5A to 5B			Fixed data-1
5C	22	22	Lens type input
5D	51	51	
5E	FD	FD	
5F	C4	C4	
60 to 71			Fixed data-1
72			Fixed data-2
73 to 7B			Fixed data-1
7C			Fixed data-2 (Modified data. Copy the data built in the same model.)
7D			
7E			
7F			Fixed data-1
80			Fixed data-2
81 to 8B			Fixed data-1
8C			Fixed data-2
8D			
8E to 8F			Fixed data-1
90			Fixed data-2
91 to B7			Fixed data-1
B7			Fixed data-2
B8 to BA			Fixed data-1
BB			Fixed data-2
BC to FB			Fixed data-1
FC			Fixed data-2
FD			
FE to FF			Fixed data-1

Table. 5-1-4.

6. 7 Page Table

Note: Fixed data-1: Initialized data. (Refer to "1. Initializing the D, E, F, 7 Page Data".)
Fixed data-2: Modified data. (Refer to "2. Modification of D, E, F, 7 Page Data".)

Address	Initial value		Remark
	NTSC	PAL	
00 to B4			Fixed data-1
B5			Fixed data-2
B6			
B7			Fixed data-1
B8			Fixed data-2 (Modified data. Copy the data built in the same model.)
B9			
BA			
BB			
BC			Fixed data-1
BD			Fixed data-2 (Modified data. Copy the data built in the same model.)
BE			
BF			
C0			
C1			Fixed data-1
C2			Fixed data-2
C3			
C4 to D4			Fixed data-1
D5			Fixed data-2
D6			Fixed data-1
D7			Fixed data-2
D8	A0	*1	RGB AMP adj. (Color EVF) *2
D9			Fixed data-1
DA	8D	*1	White balance adj. (Color EVF) *2
DB	83	*1	
DC	2F	*1	Contrast adj. (Color EVF) *2
DD			Fixed data-1
DE			Fixed data-2
DF	CA	*1	Back light consumption current adj. (Color EVF) *2
E0	07	*1	
E1	91	*1	
E2			Fixed data-1
E3			Fixed data-2
E4			
E5	6E	6E	VCO adj.(LCD) *3
E6	*1	63	VCO adj.(LCD) (PAL) *3
E7	8E	8E	V-COM adj.(LCD) *3
E8	29	29	RGB AMP adj.(LCD) *3
E9			Fixed data-1
EA	C3	C3	COM AMP adj.(LCD) *3
EB	60	60	White balance adj.(LCD) *3
EC	65	65	
ED	50	50	Contrast adj.(LCD) *3
EE			Fixed data-1
EF			Fixed data-2
F1 to F8			Fixed data-1
F9	FF	FF	REC Y current adj.
EA to FF			Fixed data-1

*1: Fixed data-1.
*2: Color EVF model (CCD-TR818)
*3: TRV model (CCD-TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)

Table. 5-1-5.

1-3. CAMERA SYSTEM ADJUSTMENTS

Before perform the camera system adjustments, check that the specified values of “VIDEO SYSTEM ADJUSTMENTS” are satisfied.

Note: NTSC model: CCD-TR618/TR818/TRV49/TRV58/TRV68/TRV78/TRV88/TRV98
PAL model: CCD-TR618E/TR718E/TR728E/TRV49E/TRV58E/TRV59E/TRV78E/TRV98E

1. Lens Type Input

Distinguish the type of the lens being used for the camcorder, and input data corresponding to the type.

Subject	Not required	
Measurement Point	Display data of page 1 (Note)	
Measuring Instrument	Adjustment remote commander	
Adjustment Page	E	F
Adjustment Address	5C, 5D, 5E, 5F	2C

Note: Displayed data of page 1 of the adjustment remote commander.
1 : XX : XX
Display data

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	6	01	65	Set the data, and press PAUSE button.
3	0	03	19	Set the data.
4	1			Check that the data. When the data is “0000”, proceed to step 5. (Glass lens type) When the data is “0001”, proceed to step 11. (Plastic lens type)
5	E	5C	21	Set the data, and press PAUSE button.
6	E	5D	84	Set the data, and press PAUSE button.
7	E	5E	FC	Set the data, and press PAUSE button.
8	E	5F	F7	Set the data, and press PAUSE button.
9	F	2C	D6	Set the data, and press PAUSE button.
10				Proceed to step 16.
11	E	5C	22	Set the data, and press PAUSE button.
12	E	5D	51	Set the data, and press PAUSE button.
13	E	5E	FD	Set the data, and press PAUSE button.
14	E	5F	C4	Set the data, and press PAUSE button.
15	F	2C	D7	Set the data, and press PAUSE button.
16	6	01	00	Set the data, and press PAUSE button.
17	0	03	00	Set the data.
18	0	01	00	Set the data.

2. HALL Adjustment

For detecting the position of the lens iris, adjust AMP gain and offset.

Subject	Not required
Measurement Point	Display data of page 1 (Note1)
Measuring Instrument	Adjustment remote commander
Adjustment Page	F
Adjustment Address	38, 39, 3A
Specified Value 1	86 to 8A
Specified Value 2	15 to 19

Note1: Displayed data of page 1 of the adjustment remote commander.
1 : 00 : XX
IRIS display data

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	6	94	88	Set the data.
3	6	95	17	Set the data.
4	6	01	6D	Set the data, and press PAUSE button.
5	6	02		Check that the data changes to “01”. (Note2)
6	6	01	00	Set the data, and press PAUSE button.

Note2: The adjustment data will be automatically input to page: F, address: 38, 39, 3A.

Checking method:

Order	Page	Address	Data	Procedure
1	0	03	03	Set the data.
2	6	01	01	Set the data, and press PAUSE button.
3	1			Check that the IRIS display data (Note1) satisfies the specified value 1.
4	6	01	03	Set the data, and press PAUSE button.
5	1			Check that the IRIS display data (Note1) satisfies the specified value.2.

Processing after Completing Adjustments:

Order	Page	Address	Data	Procedure
1	6	94	00	Set the data.
2	6	95	00	Set the data.
3	6	01	00	Set the data, and press PAUSE button.
4	0	03	00	Set the data.
5	0	01	00	Set the data.

3. Flange Back Adjustment (Using Minipattern Box)

The inner focus lens flange back adjustment is carried out automatically. In whichever case, the focus will be deviated during auto focusing/manual focusing.

Subject	Siemens star chart with ND filter for the minipattern box (Note1)
Measuring Instrument	Adjustment remote commander
Adjustment Page	F
Adjustment Address	4E to 5D, 61

Note1: Dark Siemens star chart.
Note2: Check that the data of page: 6, address: 02 is “00”. If not, to page: 6, address: 01, set data: 00, and press the PAUSE button.
Note3: 1/4 CCD model: CCD-TR818/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E

Switch setting:

NIGHT SHOT (Lens block) .... OFF

Preparations:

1) The minipattern box is installed as shown in the following figure.
   Note: The attachment lenses are not used.
2) Install the minipattern box so that the distance between it and the front of the lens of the camcorder is less than 3cm.
3) Make the height of the minipattern box and the camcorder equal.
4) Check that the output voltage of the regulated power supply is the specified voltage.
5) Check that at both the zoom lens TELE end and WIDE end, the center of the Siemens star chart and center of the exposure screen coincide.

Specified voltage:

The specified voltage varies according to the minipattern box, so adjust the power supply output voltage to the specified voltage written on the sheet which is supplied with the minipattern box.

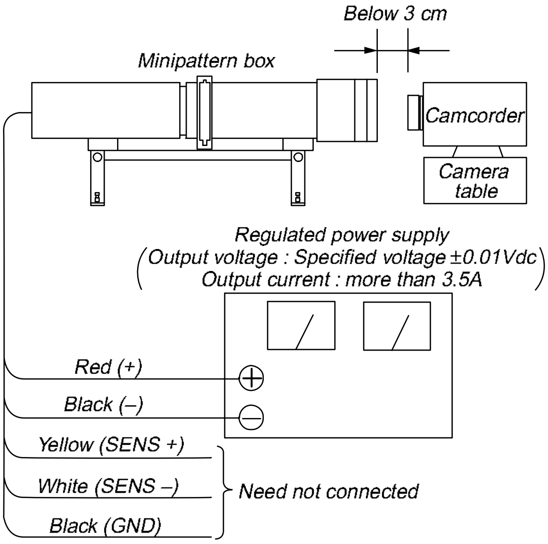


Fig. 5-1-8.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	F	A0		Only for 1/4 CCD model, write down the data.
3	F	A0	00	Only for 1/4 CCD model, set the data and press PAUSE button.
4	6	01	13	Set the data, and press PAUSE button.
5	6	01	27	Set the data, and press PAUSE button.
6	6	02		Check that the data changes to “01”. (Note4)
7	F	A0		Only for 1/4 CCD model, set the data that is written down at step 2 and press PAUSE button.

Note4: The adjustment data will be automatically input to page: F, address: 4E to 5D, 61.

Processing after Completing Adjustments:

Order	Page	Address	Data	Procedure
1	6	01	00	Set the data, and press PAUSE button.
2	0	01	00	Set the data.
3				Turn off the power and turn on again.
4				Perform “Flange Back Check”.

4. Flange Back Adjustment (Using Flange Back Adjustment Chart and Subject More Than 500m Away)

The inner focus lens flange back adjustment is carried out automatically. In whichever case, the focus will be deviated during auto focusing/manual focusing.

4-1. Flange Back Adjustment (1)

Subject	Flange back adjustment chart (2.0 m from the front of the protection glass) (Luminance: 350 ± 30 lux)
Measuring Instrument	Adjustment remote commander
Adjustment Page	F
Adjustment Address	4E to 5D, 61

Note1: Check that the data of page: 6, address: 02 is "00". If not, to page: 6, address: 01, set data: 00, and press the PAUSE button.

Note2: 1/4 CCD model: CCD-TR818/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E

Switch setting:

NIGHT SHOT (Lens block) .... OFF

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	F	A0		Only for 1/4 CCD model, write down the data.
3	F	A0	00	Only for 1/4 CCD model, set the data and press PAUSE button.
4	6	01	13	Set the data, and press PAUSE button.
5	6	01	15	Set the data, and press PAUSE button.
6	6	02		Check that the data changes to "01". (Note3)
7	F	A0		Only for 1/4 CCD model, set the data that is written down at step 2 and press PAUSE button.

Note3: The adjustment data will be automatically input to page: F, address: 4E to 5D, 61.

Processing after Completing Adjustments:

Order	Page	Address	Data	Procedure
1	6	01	00	Set the data, and press PAUSE button.
2				Turn off the power and turn on again.
3				Perform "Flange Back Adjustment (2)"

4-2. Flange Back Adjustment (2)

Perform this adjustment after performing "Flange Back Adjustment (1)".

Subject	Subject more than 500m away (Subjects with clear contrast such as buildings, etc.)
Measurement Point	Check operation on TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	4E to 5D, 61

Note1: Check that the data of page: 6, address: 02 is "00". If not, to page: 6, address: 01, set data: 00, and press the PAUSE button.

Switch setting:

NIGHT SHOT (Lens block) .... OFF

Preparations:

1) Set the zoom lens to the TELE end and expose a subject that is more than 500m away (subject with clear contrast such as building, etc.). (Nearby subjects less than 500m away should not be in the screen.)

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	F	A0		Only for 1/4 CCD model, write down the data.
3	F	A0	00	Only for 1/4 CCD model, set the data and press PAUSE button.
4	6	01	13	Set the data, and press PAUSE button.
5				Place a ND filter on the lens so that the optimum image is obtain.
6	6	01	29	Set the data, and press PAUSE button.
7	6	02		Check that the data changes to "01". (Note2)
8	F	A0		Only for 1/4 CCD model, set the data that is written down at step 2 and press PAUSE button.

Note2: The adjustment data will be automatically input to page: F, address: 4E to 5D, 61.

Processing after Completing Adjustments:

Order	Page	Address	Data	Procedure
1	6	01	00	Set the data, and press PAUSE button.
2	0	01	00	Set the data.
3				Turn off the power and turn on again.
4				Perform "Flange Back Check".

5. Flange Back Check

Subject	Siemens star (2.0m from the front of the lens) (Luminance : approx. 200 lux)
Measurement Point	Check operation on TV monitor
Measuring Instrument	
Specified Value	Focused at the TELE end and WIDE end.

Note: When the auto focus is ON, the lens can be checked if it is focused or not by observing the data on the page 1 of the adjustment remote commander.
1) Select page: 0, address: 03, and set data: 0F.
2) Page 1 shows the state of the focus.
1 : 00 : XX
Odd: Focused
Even: Unfocused

Switch setting:
NIGHT SHOT (Lens block) .... OFF

Checking method:
1) Select page: 6, address: 40, and set data: 02.
2) Select page: 6, address: 41, and set data: 01.
3) Place the Siemens star 2.0m from the front of the lens.
4) To open the IRIS, decrease the luminous intensity to the Siemens star up to a point before noise appear on the image.
5) Shoot the Siemens star with the zoom TELE end.
6) Turn on the auto focus.
7) Check that the lens is focused (Note).
8) Select page: 6, address: 21, and set data: 10.
9) Shoot the Siemens star with the zoom WIDE end.
10) Observe the TV monitor and check that the lens is focused.

Processing after Completing Adjustments:
1) Select page: 6, address: 21, and set data: 00.
2) Select page: 6, address: 40, and set data: 00.
3) Select page: 6, address: 41, and set data: 00.
4) Select page: 0, address: 03, and set data: 00.

6. Picture Frame Setting

Subject	Color bar chart (Color reproduction adjustment frame) (1.5m from the front of the lens)
Measurement Point	Video output terminal
Measuring Instrument	Oscilloscope and TV monitor
Specified Value	A=B, C=D, E=F

Switch setting:

1) NIGHT SHOT (Lens block) .... OFF
2) DIGITAL ZOOM (Menu display) .... OFF
3) STEADY SHOT (Menu display) .... OFF
4) LIGHT (FK-1000 block) .... OFF

Setting method:

1) Adjust the zoom and the camera direction, and set to the specified position.
2) Mark the position of the picture frame on the monitor display, and adjust the picture frame to this position in following adjustments using “Color reproduction adjustment frame”.

Check on the oscilloscope

1. Horizontal period

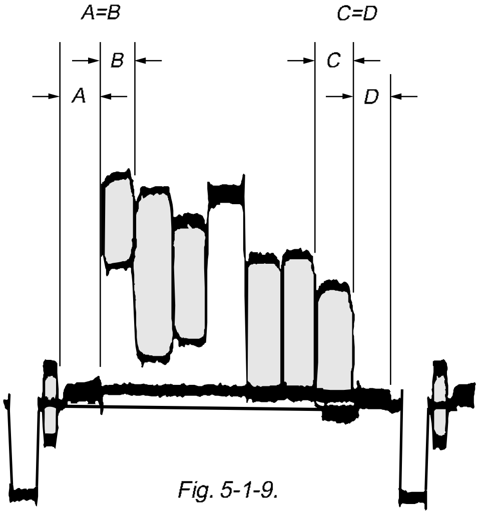


Fig. 5-1-9.

2. Vertical period

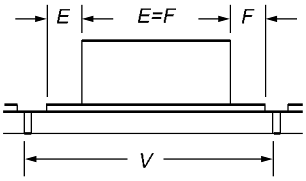


Fig. 5-1-10.

Check on the monitor TV (Underscanned mode)

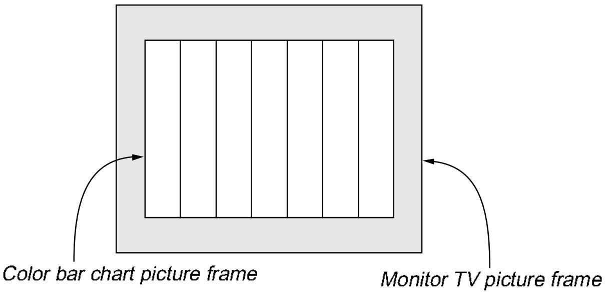


Fig. 5-1-11.

7. Color Reproduction Adjustment

Adjust the color Separation matrix coefficient so that proper color reproduction is produced.

Subject	Color bar chart (Color reproduction adjustment frame)
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	F
Adjustment Address	47, 49, D7, D8
Specified Value	All color luminance points should settle within each color reproduction frame.

Note: NTSC model: CCD-TR618/TR818/TRV49/TRV58/TRV68/TRV78/TRV88/TRV98
PAL model: CCD-TR618E/TR718E/TR728E/TRV49E/TRV58E/TRV59E/TRV78E/TRV98E

Switch setting:

1) NIGHT SHOT (Lens block) .... OFF
2) DIGITAL ZOOM (Menu display) .... OFF
3) STEADY SHOT (Menu display) .... OFF
4) LIGHT (FK-1000 block).. OFF

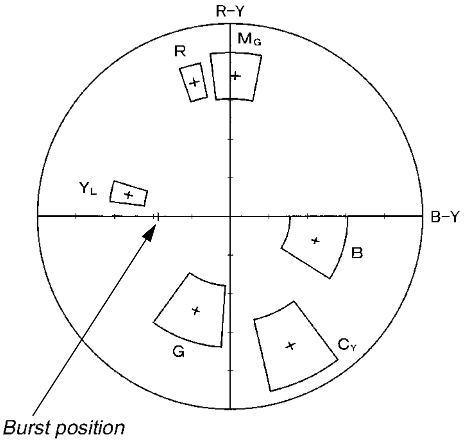
Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: F, address: 8B, and write down the data.
3) Select page: F, address: 8B, set data: 29 and press the PAUSE button.
4) Select page: F, address: 2B, set the following data and press the PAUSE button.
   17: NTSC model
   97: PAL model
5) Select page: 6, address: 01, set data: 3D, and press the PAUSE button.
6) Adjust the GAIN and PHASE of the vectorscope, and adjust the burst luminance point to the burst position of the color reproduction frame.
7) Change the data of page: F, address: 47, 49, D7 and D8, settle each color luminance point in each color reproduction frame.
   Note: Be sure to press the PAUSE button of the adjustment remote commander before changing the addresses. If not, the new data will not be written to the memory.

Processing after Completing Adjustments:

1) Select page: F, address: 8B, set the data written down at step 2), and press the PAUSE button.
2) Select page: 6, address: 01, set data: 00, and press the PAUSE button.
3) Select page: 0, address: 01, and set data: 00.

For NTSC model



For PAL model

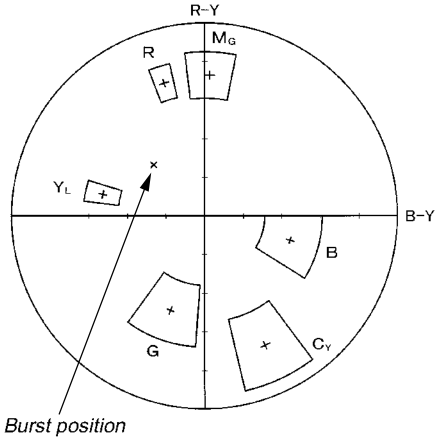


Fig. 5-1-12.

8. Auto White Balance & LV Standard Data Input

Adjust the white balance reference at 3200K, and adjust the normal coefficient of the light value.

Subject	Clear chart (Color reproduction adjustment frame)
Measurement Point	Display data of page 1 (Note3)
Measuring Instrument	Adjustment remote commander
Adjustment Page	F
Adjustment Address	3C to 41

Note1: This adjustment should be carried out upon completion of "Color reproduction adjustments".

Note2: After the power is turned on, this adjustment can be done only once.

Note3: Check that the data of page: 6, address: 02 is "00". If not, to page: 6, address: 01, set data: 00, and press the PAUSE button.

Switch setting:

1) NIGHT SHOT (Lens block) .... OFF
2) DIGITAL ZOOM (Menu display) .... OFF
3) STEADY SHOT (Menu display) .... OFF
4) LIGHT (FK-1000 block) .... OFF

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2				Wait for 2 sec.
3	6	01	11	Set the data, and press PAUSE button.
4	6	01	0D	Set the data, and press PAUSE button
5	6	02		Check that the data changes to "01". (Note4)

Note4: The adjustment data will be automatically input to page: E, address: 3C to 41.

Processing after Completing Adjustments

Order	Page	Address	Data	Procedure
1	6	01	00	Set the data, and press PAUSE button.
2	0	01	00	Set the data.
3				Perform "Auto White Balance Adjustment".

9. Auto White Balance Adjustment

Adjust to the proper auto white balance output data.
If it is not correct, auto white balance and color reproducibility will be poor.

Subject	Clear chart (Color reproduction adjustment frame)
Filter	Filter C14 for color temperature correction
Measurement Point	Display data of page 1 (Note4)
Measuring Instrument	Adjustment remote commander
Adjustment Page	F
Adjustment Address	42, 43
Specified Value	1/6 CCD NTSC model: R ratio: 2AC0 to 2B40 B ratio: 5E20 to 5EE0 1/6 CCD PAL model: R ratio: 2B40 to 2BC0 B ratio: 61A0 to 6260 1/4 CCD NTSC model: R ratio: 2D40 to 2DC0 B ratio: 5D20 to 5DE0 1/4 CCD PAL model: R ratio: 2B40 to 2BC0 B ratio: 5D20 to 5DE0

Note1: 1/6 CCD NTSC model: CCD-TR618/TRV49/TRV58
1/6 CCD PAL model: CCD-TR618E/TR718E/TR728E/TRV49E/TRV58E/TRV59E
1/4 CCD NTSC model: CCD-TR818/TRV68/TRV78/TRV88/TRV98
1/4 CCD PAL model: CCD-TRV78E/TRV98E

Note2: After the power is turned on, this adjustment can be done only once.

Note3: Perform "Auto White Balance & LV Standard Data Input" before this adjustment.

Note4: Displayed data of page 1 of the adjustment remote commander.

1 : XX : XX
Display data

Switch setting:

1) NIGHT SHOT (Lens block) .... OFF
2) DIGITAL ZOOM (Menu display) .... OFF
3) STEADY SHOT (Menu display) .... OFF
4) LIGHT (FK-1000 block) .... OFF

Adjusting method:

Order	Page	Address	Data	Procedure
1				Place the C14 filter for color temperature correction on the lens.
2	0	01	01	Set the data.
3	F	B8		Write down the data.
4	F	B8		Set the following data, and press PAUSE button. 2B: 1/6 CCD NTSC model 2B: 1/6 CCD PAL model 2D: 1/4 CCD NTSC model 2B: 1/4 CCD PAL model
5	F	B9		Write down the data.
6	F	B9		Set the following data, and press PAUSE button. 00: 1/6 CCD NTSC model 80: 1/6 CCD PAL model 80: 1/4 CCD NTSC model 80: 1/4 CCD PAL model
7	F	BA		Write down the data.
8	F	BA		Set the following data, and press PAUSE button. 5E: 1/6 CCD NTSC model 62: 1/6 CCD PAL model 5D: 1/4 CCD NTSC model 5D: 1/4 CCD PAL model
9	F	BB		Write down the data.
10	F	BB		Set the following data, and press PAUSE button. 80: 1/6 CCD NTSC model 00: 1/6 CCD PAL model 80: 1/4 CCD NTSC model 80: 1/4 CCD PAL model
11	6	01	A7	Set the data, and press PAUSE button.
12				Wait for 2 sec.
13	6	01	A5	Set the data, and press PAUSE button.
14	6	02		Check that the data changes to "01". (Note5)
15	6	01	3F	Set the data, and press PAUSE button.
16	0	03	04	Set the data.
17	1			Check that the display data (Note4) satisfies the R ratio specified value.
18	0	03	05	Set the data.
19	1			Check that the display data (Note4) satisfies the B ratio specified value.

Note5: The adjustment data will be automatically input to page: F, address: 42,43.

Processing after Completing Adjustments:

Order	Page	Address	Data	Procedure
1	6	01	00	Set the data, and press PAUSE button.
2	F	B8		Set the data that is written down at step 3, and press PAUSE button.
3	F	B9		Set the data that is written down at step 3, and press PAUSE button.
4	F	BA		Set the data that is written down at step 3, and press PAUSE button.
5	F	BB		Set the data that is written down at step 3, and press PAUSE button.
6	0	03	00	Set the data.
7	0	01	00	Set the data.

10. White Balance Check

Subject	Clear chart (Color reproduction adjustment frame)
Filter	Filter C14 for color temperature correction ND filter 1.0 and 0.4 and 0.1
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Specified Value	Fig. 5-1-13. A to B

Switch setting:

1) NIGHT SHOT (Lens block) .... OFF
2) DIGITAL ZOOM (Menu display) .... OFF
3) STEADY SHOT (Menu display) .... OFF
4) LIGHT (FK-1000 block) .... OFF

Checking method:

Order	Page	Address	Data	Procedure
				Indoor white balance check
1				Check that the lens is not covered with either filter.
2	6	01	0F	Set the data, and press PAUSE button.
3				Check that the center of the white luminance point is within the circle shown Fig. 5-1-13. A.
4	6	01	00	Set the data, and press PAUSE button.
				Outdoor white balance check
5				Place the C14 filter on the lens.
6	6	01	3F	Set the data, and press PAUSE button.
7				Check that the center of the white luminance point is within the circle shown Fig. 5-1-13. B.
8				Remove the C14 filter.
				LV data check
9				Place the ND filter 1.5 (1.0+0.1+0.4) on the lens.
10	6	01	0F	Set the data, and press PAUSE button.
11				Wait for 2 sec.
12	0	03	06	Set the data.
13	1			Check that the display data (Note) satisfies the specified value. Specified value: 0000 to 0BC0

Note: Displayed data of the adjustment remote commander.

1 : XX : XX
Display data

Processing after Completing Adjustments

Order	Page	Address	Data	Procedure
1	6	01	00	Set the data, and press PAUSE button.
2	0	03	00	Set the data.

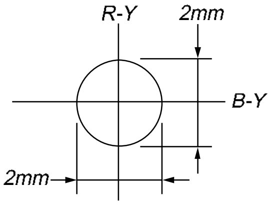


Fig. 5-1-13. (A)

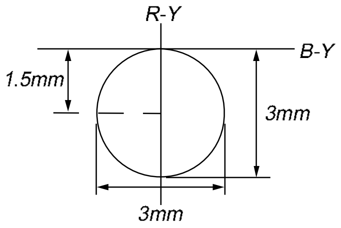


Fig. 5-1-13. (B)

11. Angular Velocity Sensor Sensitivity Adjustment (CCD-TR818/TRV68/TRV78/TRV78E/TRV88/TRV98/ TRV98E)

Precautions on the Parts Replacement

There are two types of repair parts.

Type A: ENC03JA
Type B: ENC03JB

Replace the broken sensor with a same type sensor. If replace with other type parts, the image will vibrate up and down or left and right during hand-shake correction operations. After replacing, re-adjust according to the adjusting method after replacement.

Precautions on Angular Velocity Sensor

The sensor incorporates a precision oscillator. Handle it with care as if it dropped, the balance of the oscillator will be disrupted and operations will not be performed properly.

Subject	Arbitrary
Measurement Point	Display data of page 1 (Note1)
Measuring Instrument	Adjustment remote commander
Adjustment Page	F
Adjustment Address	5E, 5F
Specified Value	2700 to 5100

Note1: Displayed data of the adjustment remote commander.
1 : XX : XX
└── Display data

Note2: MI-040 board: CCD-TR818
MI-041 board: CCD-TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E

Switch setting:

1) STEADY SHOT (Menu display) .... ON
2) ZOOM .... Center

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	F	5E		Set the following data, and press PAUSE button. 5A (NTSC), 74 (PAL)
3	F	5F		Set the following data, and press PAUSE button. 57 (NTSC), 5D (PAL)
				Pitch sensor check (MI-040/041 board SE751)
4	0	03	11	Set the data.
5	1			Check that the display data (Note1) satisfies the specified value.
				Yaw sensor check (MI-040/041 board SE752)
6	0	03	12	Set the data.
7	1			Check that the display data (Note1) satisfies the specified value.

Processing after Completing Adjustments

Order	Page	Address	Data	Procedure
1	0	01	00	Set the data.
2	0	03	00	Set the data.
3				Move the camcorder, and check that the steady shot operations have been performed normally

1-4. COLOR ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENT (CCD-TR818)

Note1: The back light (fluorescent tube) is driven by a high voltage AC power supply. Therefore, do not touch the back light holder to avoid electrical shock.

Note2: When replacing the LCD unit, be careful to prevent damages caused by static electricity.

[Adjusting connector]

Most of the measuring points for adjusting the viewfinder system are concentrated in CN713 of VC-251 board or CPC connector of FP-262 flexible.

Connect the Measuring instruments and the adjustment remote commander via the CPC jig for BX/BK (J-6082-521-A) to CN713 or CPC connector. To operate the adjustment remote commander, connect the AC power adapter to the DC IN jack of CPC jig for BX/BK, or connect the L series Info-LITHIUM battery to the battery terminal of CPC jig for BX/BK.

The following table shows the Pin No. and signal name of CN713 or CPC connector.

Pin No.	Signal Name	Pin No.	Signal Name
1	VCO	2	XLANC POWER ON
3	EVF BL	4	LANC IN
5	EVF BL 4.75V	6	LANC OUT
7	EVF VG	8	CAP FG
9	PB RF	10	REG GND
11	REG GND	12	REG GND
13	BPF MONI	14	IR VIDEO
15	REC RF	16	RF SWP
17	NC	18	NC
19	NC	20	NC

Table. 5-1-6.

The following table shows the arrangement of the test points of CPC jig for BX/BK. (Pin No. are those of CN713 or CPC connector.)

Pin No.	Signal Name	Pin No.	Signal Name
3	BL	1	EVF VCO
7	EVF VG	5	BL 4.75
9	PB RF (MON)		
13	BPF MONI	10	GND
17	TMS	15	REC RF (RF IN)
20	TDI	19	TDO
16	SWP	18	TCK
15	CAP FG	14	IR VIDEO

Table. 5-1-7.

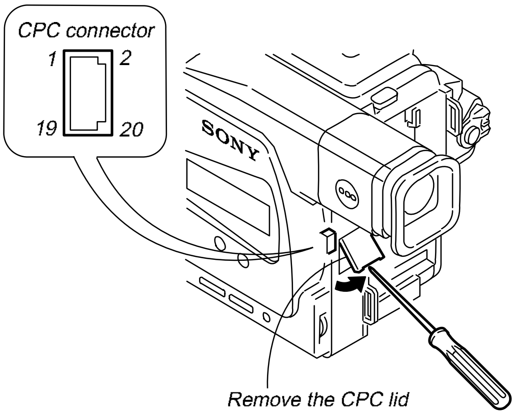


Fig. 5-1-14.

1. RGB AMP Adjustment (VF-141 board)

Set the D range of the RGB driver used to drive the LCD to the specified value. If deviated, the LCD screen will become blackish or saturated (whitish).

Mode	Camera
Subject	Arbitrary
Measurement Point	EVF VG (Pin ⑦ of CPC connector of FP-262 flexible or Pin ⑦ of CN713 of VC-251 board)
Measuring Instrument	Oscilloscope
Adjustment Page	7
Adjustment Address	D8
Specified Value	A = 7.20 ± 0.10V

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	7	D8		Change the data and set the voltage (A) between the reversed waveform pedestal and non-reversed waveform pedestal to the specified value.
3	7	D8		Press PAUSE button.
4	0	01	00	Set the data.

2. Contrast Adjustment (VF-141 board)

Set the level of the VIDEO signal for driving the LCD to the specified value. If deviated, the screen image will be blackish or saturated (whitish).

Mode	Camera
Subject	Arbitrary
Measurement Point	EVF VG (Pin ⑦ of CPC connector of FP-262 flexible or Pin ⑦ of CN713 of VC-251 board)
Measuring Instrument	Oscilloscope
Adjustment Page	7
Adjustment Address	DC
Specified Value	A=2.20 ± 0.10V

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	7	DC		Change the data and set the voltage (A) between the 100 IRE and 0 IRE (pedestal) to the specified value. (The data should be "00" to "7F".)
3	7	DC		Press PAUSE button.
4	0	01	00	Set the data.

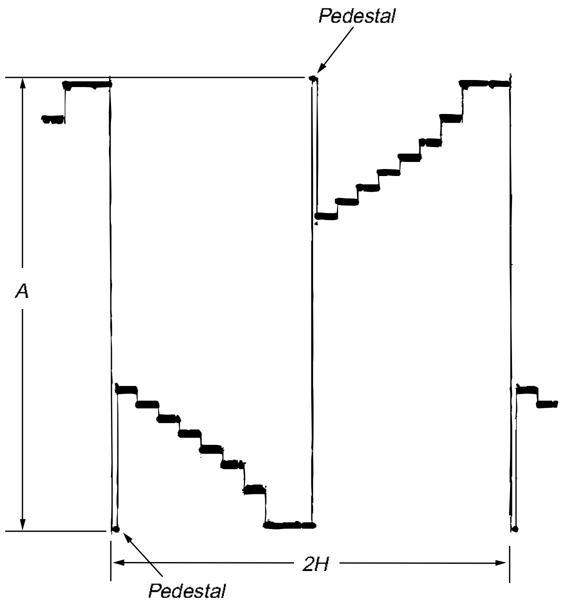


Fig. 5-1-15.

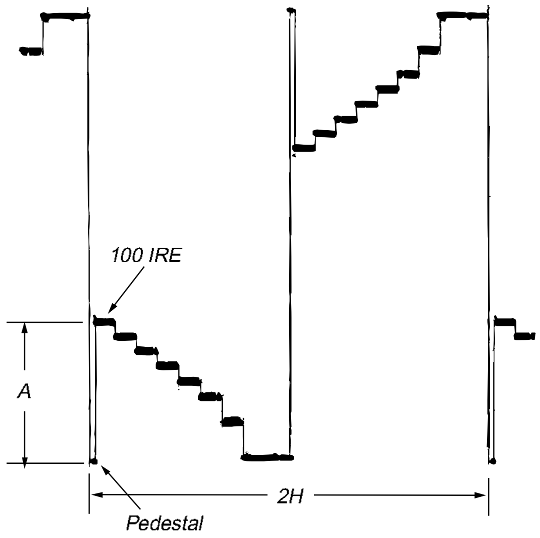


Fig. 5-1-16.

3. Backlight Consumption Current Adjustment (LB-062 board)

Set the backlight luminance and color temperature.
If deviated, the image may become dark or bright.

Mode	Camera
Subject	Arbitrary
Measurement Point	+ Probe: BL 4.75V (Pin ⑤ of CPC connector of FP-262 flexible or Pin ⑤ of CN713 of VC-251 board) – Probe: BL (Pin ③ of CPC connector of FP-262 flexible or Pin ③ of CN713 of VC-251 board)
Measuring Instrument	Digital voltmeter
Adjustment Page	7
Adjustment Address	DF, E0, E1
Specified Value	BRIGHT mode : A=15.5 ± 1mVdc NORMAL mode : A=9.5 ± 1mVdc

Note1: Perform the adjustment in the following order.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	7	DF	CA	Set the data, and press PAUSE button.
3	7	E0	07	Set the data, and press PAUSE button.
4	7	E1	91	Set the data, and press PAUSE button.
5	7	E0		Change the data and set the voltage difference (A) between BL4.75V and BL to the specified value of BRIGHT mode. (The data should be "00" to "3F".)
6	7	E0		Press PAUSE button.
7	7	E0		Read the data, and this data is named D_{E0}.
8				Convert D_{E0} to decimal notation, and obtain D_{E0}'. (Note2)
9				Calculate D_{DF}' using following equations (Decimal calculation) $D_{DF}' = D_{E0}' + 192$
10				Convert D_{DF}' to a hexadecimal number, and obtain D_{DF}. (Note2) (The data should be "C0" to "FF".)
11	7	DF	D_{DF}	Set the data, and press PAUSE button.
12	7	E1		Change the data and set the voltage difference (A) between BL4.75V and BL to the specified value of NORMAL mode. (The data should be "80" to "9F".)
13	7	E1		Press PAUSE button.
14	0	01	00	Set the data.

Note2: Refer to "Table 5-4-1. Hexadecimal-decimal Conversion Table".

4. White Balance Adjustment (VF-141 board)

Correct the white balance.
If deviated, the reproduction of the EVF screen may degenerate.

Mode	Camera
Signal	Arbitrary
Measurement Point	Check on EVF screen
Measuring Instrument	
Adjustment Page	7
Adjustment Address	DA, DB
Specified Value	The EVF screen should not be colored.

Note1: Check the white balance only when replacing the following parts. If necessary, adjust them.
1. LCD panel
2. Light induction plate
3. IC4501

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	7	DA	8D	Set the data, and press PAUSE button.
3	7	DB	83	Set the data, and press PAUSE button.
4	7	DA		Check that the EVF screen is not colored. If not colored, proceed to step 10.
5	7	DA		Change the data so that the EVF screen is not colored.
6	7	DA		Press PAUSE button.
7	7	DB		Change the data so that the EVF screen is not colored.
8	7	DB		Press PAUSE button.
9	7	DB		If the EVF screen is colored, repeat steps 5 to 9.
10	0	01	00	Set the data.

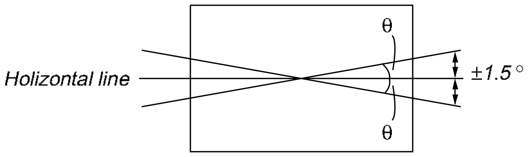
1-5. MONOCHROME ELECTRONIC VIEWFINEDER SYSTEM ADJUSTMENT (CCD-TR618/TR618E/TR718E/TR728E/TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)

1-5-1. Horizontal Slant Check

Mode	Playback
Signal	Alignment tape : For checking operation (WR5-5NSP (NTSC)) (WR5-5CSP (PAL)) Monoscope section
Specified Value	± 1.5°

Adjusting method:

1) Adjust RV904 (BRIGHT) (VF-129 board) so that the CRT can be seen easily and clearly.
2) Check that the difference between the horizontal line and the tilt of black mask satisfies the specified value.


θ
Holizontal line
±1.5°
θ

Specified value : The image should be within ± 1.5° of the holizontal line.

Fig. 5-1-17.

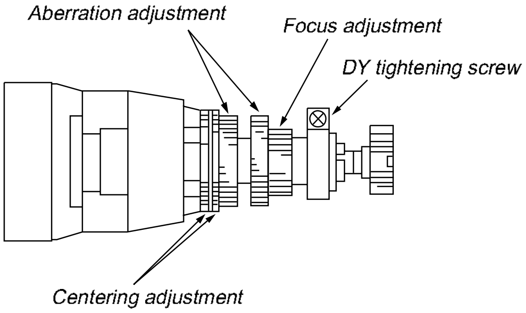
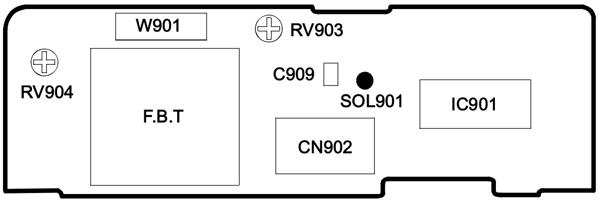

Aberration adjustment
Focus adjustment
DY tightening screw
Centering adjustment

Fig. 5-1-18.

VF-129 BOARD


W901
RV903
RV904
C909
SOL901
IC901
F.B.T
CN902

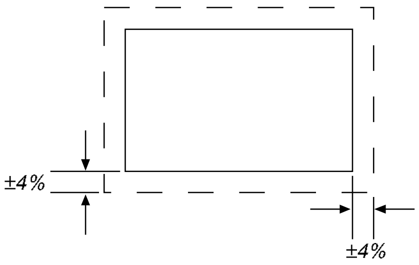
1-5-2. Centering Adjustment

Mode	Playback
Signal	Alignment tape : For checking operation (WR5-5NSP (NTSC)) (WR5-5CSP (PAL)) Monoscope section
Specified Value	± 4%

Adjusting method:

1) Use the centering adjustment ring and adjust so that the left, light, top, and bottom sides of the display are uniform. (Refer to Fig. 5-1-18.)

   Note: As the centering position changes due to earth magnetism, rotate it 360° in the horizontal direction, and adjust with the center section of the modifying position.



Adjustment value : ±4%

Fig. 5-1-19.

1-5-3. Focus Adjustment

Mode	Playback
Signal	Alignment tape : For checking operation (WR5-5NSP (NTSC)) (WR5-5CSP (PAL)) Monoscope section

Adjusting method:

1) Adjust the focus ring to obtain the optimum focus. (Refer to Fig. 5-1-18.)

1-5-4. Aberration Adjustment

Mode	VTR stop
Signal	Dot pattern
Specified Value	b1 ≦ 2 × a1 b2 ≦ 0.8 × a2

Adjusting method:

1) Adjust the aberration adjustment ring so that the tracing of the dot satisfies the specified value.
2) If the centering becomes displaced here, perform the centering adjustment from the beginning again.

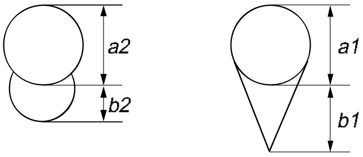


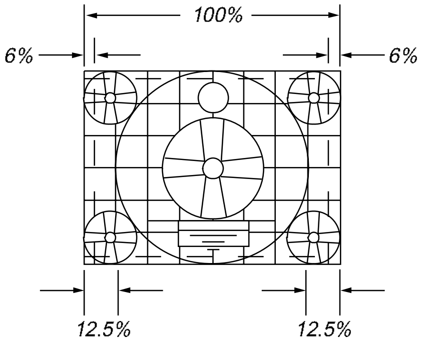
Fig. 5-1-20.

1-5-5. Horizontal Amplitude Adjustment (VF-129 board)

Mode	Playback
Signal	Alignment tape : For checking operation (WR5-5NSP (NTSC)) (WR5-5CSP (PAL)) Monoscope section
Adjusting Element	C909 (SOL901)
Specified Value	12 ± 6%

Adjusting method:

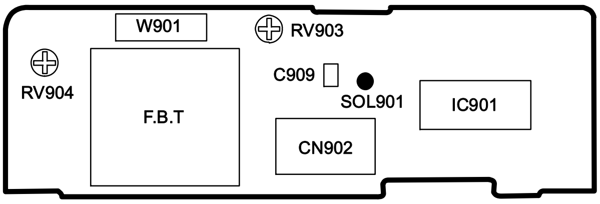
1) Rotate RV903, and adjust the top and bottom side of the monoscope image to the top and bottom edges of the display.
2) Rotate RV904 so that the brightness is the normal level.
3) Solder or unsolder SOL901 pattern of the H size adjustment capacitor (C909) to “short” or “open”, so that the horizontal direction over scan becomes 10 ± 6% (Left and right totals).



SOL901	Size H
Open	Small
Short	Big

Fig. 5-1-21.

VF-129 BOARD



1-5-6. Vertical Amplitude Adjustment (VF-129 board)

Mode	Playback
Signal	Alignment tape : For checking operation (WR5-5NSP (NTSC)) (WR5-5CSP (PAL)) Monoscope section
Adjusting Element	RV903
Specified Value	10 ± 3%

Adjusting method:

1) Adjust RV903 so that the vertical direction over scan becomes 10 ± 3% (Top and bottom totals).

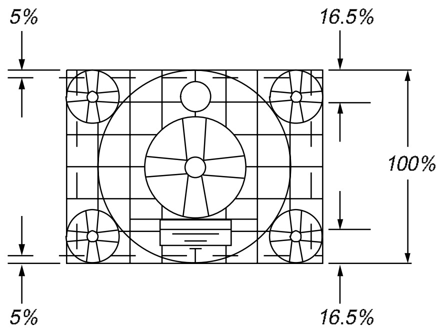


Fig. 5-1-22.

1-5-7. Brightness Adjustment (VF-129 board)

Mode	Playback
Signal	Alignment tape : For checking operation (WR5-5NSP (NTSC)) (WR5-5CSP (PAL)) Monoscope section
Adjusting Element	RV904

Adjusting method:

1) Rotate RV904, and adjust so that the bright/dark sections of gray scale are displayed correctly. (The bright section should be unsatisfactory till the cross hatch appears vague in the monoscope circle. The dark section should be unsatisfactory till the darkest section of the gray scale cannot be differentiate.)

1-5-8. Horizontal Amplitude, Vertical Amplitude, Focus Check

"1-5-5. Horizontal Amplitude Adjustment" and "1-5-6. Vertical Amplitude Adjustment" should be both satisfy the specified values. If not, perform the adjustments from the beginning again. In this case, perform "1-5-7. Brightness Adjustment" again.
Moreover, check the focus, and if it found to be vague, perform "1-5-3. Focus Adjustment" and "1-5-4. Aberration Adjustment".

1-6. LCD SYSTEM ADJUSTMENT (CCD-TRV49/TRV49E/TRV58/TRV58E/TRV59E/ TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)

Note 1: The back light (fluorescent tube) is driven by a high voltage AC power supply. Therefore, do not touch the back light holder to avoid electrical shock.

Note 2: When replacing the LCD unit, be careful to prevent damages caused by static electricity.

Note 3: Set the LCD BRIGHT (Menu display) to the center.
Set the LCD COLOR (Menu display) to the center.

Note 4: Connect the adjustment remote commander to CN713 of VC-251 board or CPC connector of FP-262 flexible via CPC jig for BX/BK (J-6082-521-A). To operate the adjustment remote commander, connect the AC power adapter (8.4Vdc) to the DC IN jack of CPC jig for BX/BK, or connect the L series Info-LITHIUM battery to the battery terminal of CPC jig for BX/BK.

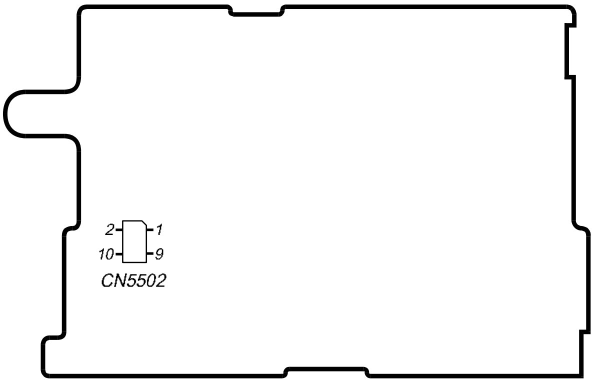
[Adjusting connector]

Most of the measuring points for adjusting the LCD system are concentrated in CN5502 of the PD-131 board. Connect the measuring instruments via the multi CPC jig (J-6082-311-A). The following table shows the Pin No. and signal name of CN5502.

Pin No.	Signal Name	Pin No.	Signal Name
1	VB	2	XVD OUT
3	VG	4	PANEL COM/PSIG
5	VR	6	PANEL ID
7	C-SYNC/XHD	8	XHD OUT
9	GND	10	GND

Table. 5-1-8.

PD-131 board



1. LCD Type Check

By measuring the resistor value between Pin ⑥ of CN5502 and GND, the type of LCD can be discriminated.

Resistor value	LCD type	CCD-
1.0kΩ	2.5 LCD TYPE S (61k)	TRV49,TRV49E,TRV58, TRV58E,TRV59E, TRV68,TRV78,TRV78E
4.7kΩ	3.0 LCD TYPE S (123k)	TRV88
5.6kΩ	3.5 LCD TYPE S (123k)	TRV98,TRV98E

Table. 5-1-9.

2. VCO Adjustment (PD-131 board)

Set the VCO free-run frequency. If deviated, the LCD screen will be blurred.

Mode	VTR stop
Signal	No signal
Measurement Point	Pin ⑧ of CN5502 (XHD OUT)
Measuring Instrument	Frequency counter
Adjustment Page	7
Adjustment Address	E5, E6
Specified Value	f = 15734 ± 30Hz (NTSC) f = 15625 ± 30Hz (PAL)

Note1: NTSC model: CCD-TRV49/TRV58/TRV68/TRV78/TRV88/TRV98
PAL model: CCD-TRV49E/TRV58E/TRV59E/TRV78E/TRV98E

Note2: Refer to "1. LCD Type Check" for the discrimination of the LCD type.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	7	E5		Change the data and set theVCO frequency (f) to the specified value.
3	7	E5		Press PAUSE button.
4	7	E5		Read the data, and this data is named DE5.
5				Convert DE5 to decimal notation, and obtain DE5'. (Note3)
6				Calculate DE6' using following equations (Decimal calculation) [2.5 LCD TYPE S] When DE5' ≧ 20 DE6' = DE5' – 20 When DE5' < 20 DE6' = 00 [3.0 LCD TYPE S] When DE5' ≧ 23 DE6' = DE5' – 23 When DE5' < 23 DE6' = 00 [3.5 LCD TYPE S] When DE5' ≧ 4 DE6' = DE5' – 4 When DE5' < 4 DE6' = 00
7				Convert DE6' to a hexadecimal number, and obtain DE6. (Note3)
8	7	E6	DE6	Set the data, and press PAUSE button.
9	0	01	00	Set the data.

Note3: Refer to "Table 5-4-1. Hexadecimal-decimal Conversion Table".

3. RGB AMP Adjustment (PD-131 board)

Set the D range of the RGB decoder used to drive the LCD to the specified value. If deviated, the LCD screen will become blackish or saturated (whitish).

Mode	VTR stop
Signal	No signal
Measurement Point	Pin ③ of CN5502 (VG) External trigger: Pin ④ of CN5502 (PANEL COM)
Measuring Instrument	Oscilloscope
Adjustment Page	7
Adjustment Address	E8
Specified Value	A = 3.60 ± 0.05V

Note: Refer to "1. LCD Type Check" for the discrimination of the LCD type.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	7	E8		Change the data and set the voltage (A) between the reversed waveform pedestal and non-reversed waveform pedestal to the specified value. (The data should be "00" to "3F".)
3	7	E8		Press PAUSE button.
4	0	01	00	Set the data.

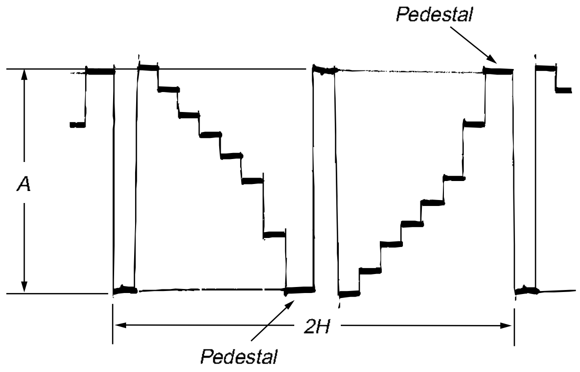


Fig. 5-1-23.

4. Contrast Adjustment (PD-131 board)

Set the level of the VIDEO signal for driving the LCD to the specified value. If deviated, the screen image will be blackish or saturated (whitish).

Mode	VTR stop
Signal	No signal
Measurement Point	Pin ③ of CN5502 (VG) External trigger: Pin ④ of CN5502 (PANEL COM)
Measuring Instrument	Oscilloscope
Adjustment Page	7
Adjustment Address	ED
Specified Value	2.5 LCD TYPE S: A = 3.55 ± 0.07V 3.0/3.5 LCD TYPE S: A = 3.35 ± 0.07V

Note: Refer to "1. LCD Type Check" for the discrimination of the LCD type.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	7	ED		Change the data and set the voltage (A) between the 100 IRE and 0 IRE (pedestal) to the specified value. (The data should be "00" to "7F".)
3	7	ED		Press PAUSE button.
4	0	01	00	Set the data.

5. COM AMP Adjustment (PD-131 board)

Set the common electrode drive signal level of LCD to the specified value.

Mode	VTR stop
Signal	No signal
Measurement Point	Pin ④ of CN5502 (PANEL COM)
Measuring Instrument	Oscilloscope
Adjustment Page	7
Adjustment Address	EA
Specified Value	2.5 LCD TYPE S: A = 6.30 ± 0.05V (NTSC) A = 6.10 ± 0.05V (PAL) 3.0 LCD TYPE S: A = 6.00 ± 0.05V (NTSC) 3.5 LCD TYPE S: A = 5.90 ± 0.05V (NTSC) A = 6.00 ± 0.05V (PAL)

Note1: Refer to "1. LCD Type Check" for the discrimination of the LCD type.

Note2: NTSC model: CCD-TRV49/TRV58/TRV68/TRV78/TRV88/TRV98
PAL model: CCD-TRV49E/TRV58E/TRV59E/TRV78E/TRV98E

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	7	EA		Change the data and set the PANEL COM signal level (A) to the specified value.
3	7	EA		Press PAUSE button.
4	0	01	00	Set the data.

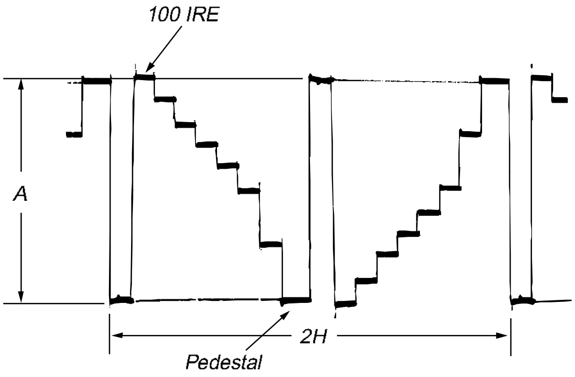


Fig. 5-1-24.

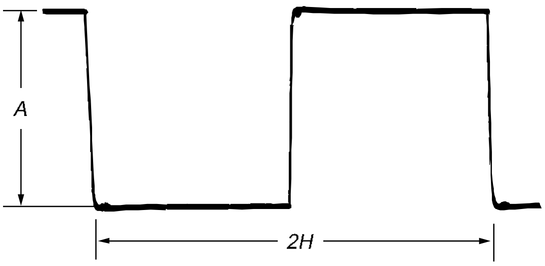


Fig. 5-1-25.

6. V-COM Adjustment (PD-131 board)

Set the DC bias of the common electrode drive signal of LCD to the specified value.
If deviated, the LCD display will move, producing flicker and conspicuous vertical lines.

Mode	VTR stop
Signal	No signal
Measurement Point	Check on LCD display
Measuring Instrument	
Adjustment Page	7
Adjustment Address	E7
Specified Value	The brightness difference between the section A and section B is minimum.

Note: This adjustment should be carried out upon completion of the following adjustments.
RGB AMP Adjustment
Contrast Adjustment
COM AMP Adjustment

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	7	E7		Change the data so that the brightness of the section A and that of the section B is equal.
3	7	E7		Subtract 8 from the data.
4	7	E7		Press PAUSE button.
5	0	01	00	Set the data.

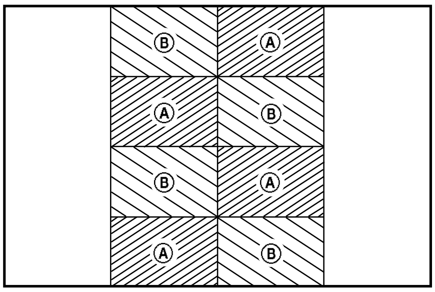


Fig. 5-1-26.

7. White Balance Adjustment (PD-131 board)

Correct the white balance.
If deviated, the reproduction of the LCD screen may degenerate.

Mode	VTR stop
Signal	No signal
Measurement Point	Check on LCD screen
Measuring Instrument	
Adjustment Page	7
Adjustment Address	EB, EC
Specified Value	The LCD screen should not be colored.

Note1: Check the white balance only when replacing the following parts. If necessary, adjust them.
1. LCD panel
2. Light induction plate
3. IC5501

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	E	EB	60	Set the data, and press PAUSE button.
3	E	EC	65	Set the data, and press PAUSE button.
4	E	EB		Check that the LCD screen is not colored. If not colored, proceed to step 10.
5	E	EB		Change the data so that the LCD screen is not colored.
6	E	EB		Press PAUSE button.
7	E	EC		Change the data so that the LCD screen is not colored.
8	E	EC		Press PAUSE button.
9	E	EC		If the LCD screen is colored, repeat steps 5 to 9.
10	0	01	00	Set the data.

5-2. MECHANISM SECTION ADJUSTMENT

Mechanism Section adjustments, checks, and replacement of mechanism parts, refer to the separate volume "8mm Video Mechanism Adjustment Manual Ⅶ B Mechanism ".

2-1. ADJUSTMENT REMOTE COMMANDER

Connect the adjustment remote commander to CN713 of VC-251 board or CPC connector of FP-262 flexible via CPC jig for BX/BK (J-6082-521-A). To operate the adjustment remote commander, connect the AC power adapter (8.4Vdc) to the DC IN jack of CPC jig for BX/BK, or connect the L series Info-LITHIUM battery to the battery terminal of CPC jig for BX/BK.

2-2. OPERATING WITHOUT CASSETTE

1) Refer to "Section 2. DISASSEMBLY" and supply the power with the cabinet assembly removed. (So that the mechanical deck can be operated.)
2) Connect the adjustment remote commander.
3) Turn on the HOLD switch of the adjustment remote commander.
4) Close the cassette compartment without loading a cassette and complete loading.
5) Select page: 0, address: 01, and set data: 01.
6) Select page: F, address: 22, set data: 81, and press the PAUSE button of the adjustment remote commander.
7) Select page: D, address: 10, set data: 10, and press the PAUSE button of the adjustment remote commander.
8) Disconnect the power supply of the unit.
   By carrying out the above procedure, the unit can be operated without loading a cassette.
   Be sure to carry out "Processing after Operations" after checking the operations.
   Set the data of page: D, address: 10 to the following if the sensor ineffective mode, forced VTR power supply On mode or forced camera power supply ON mode are to be used together.
      Forced VTR power ON mode 12
      Forced camera power ON mode 11

[Procedure after checking operations]

1) Select page: 0, address: 01, and set data: 01.
2) Select page: F, address: 22, set data: 80, and press the PAUSE button of the adjustment remote commander.
3) Select page: D, address: 10, set data: 00, and press the PAUSE button of the adjustment remote commander.
4) Select page: 0, address: 01, and set data: 00.
5) Disconnect the power supply of the unit.

2-3. TAPE PATH ADJUSTMENT

1. Preparations for Adjustment

1) Clean the tape path face (tape guide, capstan shaft, pinch roller).
2) Connect the adjustment remote commander.
3) Turn on the HOLD switch of the adjustment remote commander.
4) Select page: 0, address: 01, and set data: 01.
5) Select page: F, address: 22, set data: 88, and press the PAUSE button of the adjustment remote commander.
   (Be sure to perform "Processing after operation" after completing adjustments.)
6) Connect the oscilloscope to CPC jig for BX/BK.
      Channel 1: PB RF (MON)
      External trigger: SWP
7) Playback the alignment tape for tracking. (WR5-1NP (NTSC), WR5-1CP (PAL))
8) Check that the oscilloscope RF waveform is normal at the entrance and exit.
   If not normal, adjust according to the separate volume "8mm Video Mechanical Adjustment Manual Ⅶ B Mechanism ".
9) Perform "Processing after operations", after completing adjustment.

Test point of CPC jig for BX/BK

Pin No.	Signal Name	Pin No.	Signal Name
3	BL	1	EVF VCO
7	EVF VG	5	BL 4.75
9	PB RF (MON)		
13	BPF MONI	10	GND
17	TMS	15	REC RF (RF IN)
20	TDI	19	TDO
16	SWP	18	TCK
8	CAP FG	14	IR VIDEO

Note: Pin No. are those of CN713 or CPC connector.

Table 5-2-1.

[Procedure after operations]

1) Connect the adjustment remote commander, and turn on the HOLD switch.
2) Select page: 0, address: 01, and set data: 01.
3) Select page: F, address: 22, set data: 80, and press the PAUSE button of the adjustment remote commander.
4) Select page: 0, address: 01, and set data: 00.
5) Remove the power supply from the unit.

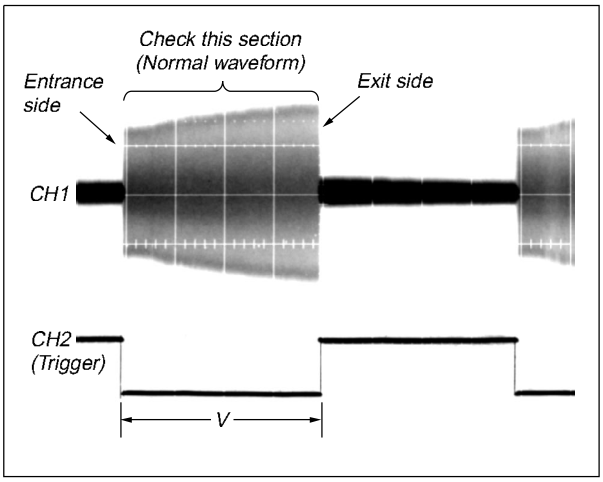


Fig. 5-2-1.

5-3. VIDEO SECTION ADJUSTMENTS

3-1. PREPARATIONS BEFORE ADJUSTMENTS

Use the following measuring instruments for video section adjustments.

3-1-1. Equipment to Required

1) TV monitor
2) Oscilloscope (dual-phenomenon, band width above 30 MHz with delay mode) (Unless specified otherwise, use a 10 : 1 probe.)
3) Frequency counter
4) Pattern generator with video output terminal
5) Digital voltmeter
6) Audio generator
7) Audio level meter
8) Audio distortion meter
9) Audio attenuator
10) Regulated power supply
11) NTSC alignment tapes
    - For tracking adjustment (WR5-1NP)
      Parts code : 8-967-995-02
    - For video frequency characteristics adjustment (WR5-7NE)
      Parts code : 8-967-995-13
    - For checking Standard 8 mode operations
    - For LP (WR5-4NL)
      Parts code : 8-967-995-51
    - For SP (WR5-5NSP)
      Parts code : 8-967-995-42

    Note: The following alignment tapes can also be used.
    WR5-4NSP (8-967-995-41)
    - For checking Hi8 mode operations
    - For LP (WR5-8NLE)
      Parts code : 8-967-995-52
    - For SP (WR5-8NSE)
      Parts code : 8-967-995-43
    - For BPF adjustment (WR5-11NS)
      Parts code : 8-967-995-71
12) PAL alignment tapes
    - For tracking adjustment (WR5-1CP)
      Parts code : 8-967-995-07
    - For video frequency characteristics adjustment (WR5-7CE)
      Parts code : 8-967-995-18
    - For checking Standard 8 mode operations
    - For LP (WR5-4CL)
      Parts code : 8-967-995-56
    - For SP (WR5-5CSP)
      Parts code : 8-967-995-47

    Note: The following alignment tapes can also be used.
    1) WR5-3CL (8-967-995-36)
    2) WR5-4CSP (8-967-995-46)
    - For checking Hi8 mode operations
    - For LP (WR5-8CLE)
      Parts code : 8-967-995-57
    - For SP (WR5-8CSE)
      Parts code : 8-967-995-48
    - For BPF adjustment (WR5-11CS)
      Parts code : 8-967-995-76
13) Adjustment remote commander (J-6082-053-B)
14) CPC jig for BX/BK (J-6082-521-A)
15) IR receiver jig (J-6082-383-A)

3-1-2. Precautions on Adjusting

1) Connect the adjustment remote commander to CN713 of VC-251 board or CPC connector of FP-262 flexible via CPC jig for BX/BK (J-6082-521-A). To operate the adjustment remote commander, connect the AC power adapter to the DC IN jack of CPC jig for BX/BK, or connect the L series Info-LITHIUM battery to the battery terminal of CPC jig for BX/BK.
2) The adjustments of this unit are performed in the VTR mode or camera mode.
   To set to the VTR mode, set the power switch to "PLAYER" or set the "Forced VTR Power ON mode" using the adjustment remote commander (Note3).
   To set to the Camera mode, set the power switch to "CAMERA" or set the "Forced Camera Power ON mode" using the adjustment remote commander (Note4).
   After completing adjustments, be sure to exit the "Forced VTR Power ON Mode" or "Forced Camera Power ON Mode". (Note6)
3) The front panel block (MI-040/041 board, microphone unit, video light) need not be connected except during "IR transmitter adjustment (CCD-TRV98)". To remove, disconnect the following connector.
   MI-040/041 board CN754 (24P 0.5mm)
4) As removing the cabinet (R) assembly (removing CN709 of the VC-251 board) means removing the lithium 3V power supply (CF-1000 block/CF-077 board BT101), data such as date, time, user-set menus will be lost. After completing adjustments, reset these data. If the cabinet (R) assembly has been removed, the self-diagnosis data, data on history of use (total drum rotation time etc.) will be lost. Before removing, note down the self-diagnosis data (data of page: 2, address: B0 to C6) and the data on history use (data of page: 2, address: A2 to AA and E0 to E2). (Refer to "5-4.Service Mode".)
5) The cabinet (R) assembly (CF-077 board (TR model), CF-1000 block, LCD block (TRV model)) need not be connected to operate the VTR block. When removing the cabinet (R) assembly, disconnect the following connectors.
   1. VC-251 board CN709 (24P, 0.5mm)
   2. VC-251 board CN701 (20P, 0.8mm) (TRV model)
6) The lens block (CD-281/286 board) need not be connected. To remove, disconnect the following connectors.
   1. VC-251 board CN271 (14P, 0.5mm)
   2. VC-251 board CN291 (24P, 0.5mm)
7) The EVF block (VF-129/144 board) need not be connected. To remove, disconnect the following connectors.
   1. VC-251 board CN715 (4P, 1.0mm) (B/W EVF model)
   2. VC-251 board CN708 (20P, 0.5mm) (Color EVF model)
8) By setting the "Forced VTR Power ON mode" or "Forced Camera Power ON mode", the video section can be operate even if the control switch block (SS-1000) has been removed. When removing the control switch block (SS-1000), disconnect the following connector.
   VC-251 board CN711 (5P 0.8mm)

Note1: TRV model:
CCD-TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E
TR model:
CCD-TR618/TR618E/TR718E/TR728E/TR818
Color EVF model:
CCD-TR818
B/W EVF model:
CCD-TR618/TR618E/TR718E/TR728E/TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E

Note2: MI-040 board, CF-1000 block, CD-281 board: TRV model
MI-041 board, CF-077 board, CD-286 board: TR model
VF-129 board: B/W EVF model
VF-141 board: Color EVF model

Note3: Setting the "Forced VTR Power ON" mode (VTR mode)
1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 10, set data: 02, and press the PAUSE button.
The above procedure will enable the VTR power to be turned on with the control switch block (SS-1000) removed.
After completing adjustments, be sure to exit the "Forced VTR Power ON mode".

Note4: Setting the "Forced Camera Power ON" mode (Camera mode)
1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 10, set data: 01, and press the PAUSE button.
The above procedure will enable the camera power to be turned on with the control switch block (SS-1000) removed.
After completing adjustments, be sure to exit the "Forced Camera Power ON mode".

Note5: Exiting the "Forced Power ON" mode
1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 10, set data: 00, and press the PAUSE button.
3) Select page: 0, address: 01, and set data: 00.

3-1-3. Adjusting Connectors

Some of the adjusting points of the video section are concentrated in CN713 of VC-251 board or CPC connector of FP-262 flexible. Connect the Measuring instruments and the adjustment remote commander via the CPC jig for BX/BK (J-6082-521-A) to CN713 or CPC connector. To operate the adjustment remote commander, connect the AC power adapter to the DC IN jack of CPC jig for BX/BK, or connect the L series Info-LITHIUM battery to the battery terminal of CPC jig for BX/BK.

The following table shows the Pin No. and signal name of CN713 or CPC connector.

Pin No.	Signal Name	Pin No.	Signal Name
1	VCO	2	XLANC POWER ON
3	EVF BL	4	LANC IN
5	EVF BL 4.75V	6	LANC OUT
7	EVF VG	8	CAP FG
9	PB RF	10	REG GND
11	REG GND	12	REG GND
13	BPF MONI	14	IR VIDEO
15	REC RF	16	RF SWP
17	NC	18	NC
19	NC	20	NC

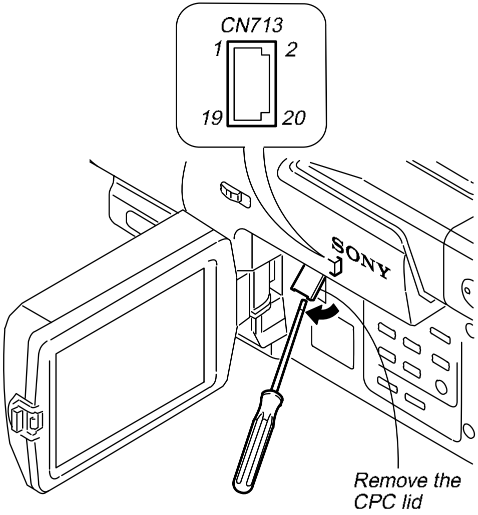
Table 5-3-1.

The following table shows the arrangement of the test points of CPC jig for BX/BK. (Pin No. are those of CN713 or CPC connector.)

Pin No.	Signal Name	Pin No.	Signal Name
3	BL	1	EVF VCO
7	EVF VG	5	BL 4.75
9	PB RF (MON)		
13	BPF MONI	10	GND
17	TMS	15	REC RF (RF IN)
20	TDI	19	TDO
16	SWP	18	TCK
8	CAP FG	14	IR VIDEO

Table 5-3-2.

[TRV model]


CN713
1
2
19
20
SONY
Remove the CPC lid

[TR model]

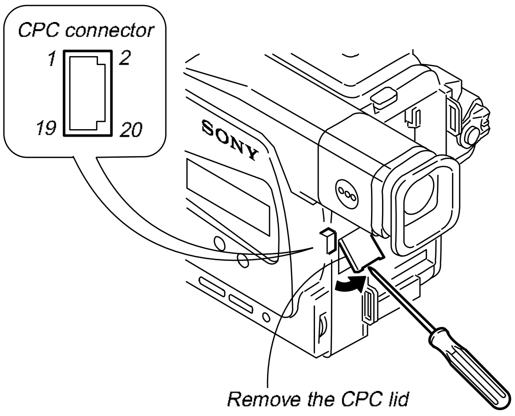

CPC connector
1
2
19
20
SONY
Remove the CPC lid

Fig. 5-3-1.

3-1-4. Connecting the Equipment

Connect the measuring instruments as shown in Fig. 5-3-2 and perform the adjustments.

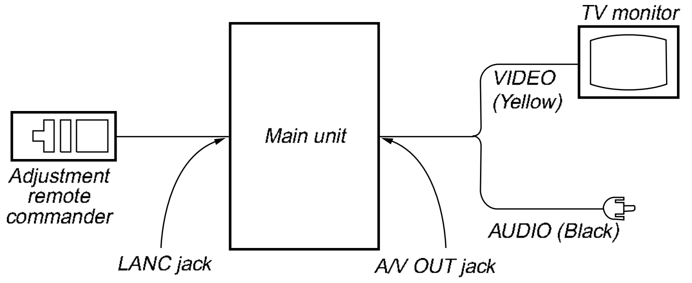

TV monitor
VIDEO
(Yellow)
Main unit
Adjustment
remote
commander
AUDIO (Black)
LANC jack
A/V OUT jack

Fig. 5-3-2.

3-1-5. Alignment Tape

The following table lists alignment tapes which are available.
Use the tape specified in the signal column for each adjustment. If the type of tape to be used for checking operations is not specified, use whichever type.

Alignment tape

Name	Recording mode	Tape type	Tape speed	Usage
Tracking (WR5-1NP(NTSC), WR5-1CP(PAL))	Standard 8	MP	SP	Tape path adjustment, Switching position adjustment
Video frequency characteristics (WR5-7NE(NTSC), WR5-7CE(PAL))	Hi8	ME	SP (NTSC) LP (PAL)	Frequency characteristics adjustment
Operation check (WR5-5NSP(NTSC), WR5-5CSP(PAL))	Standard 8	MP	SP	Operation check
Operation check (WR5-8NSE(NTSC), WR5-8CSE(PAL))	Hi8	ME	SP	
Operation check (WR5-4NL(NTSC), WR5-4CL(PAL))	Standard 8	MP	LP	
Operation check (WR5-8NLE(NTSC), WR5-8CLE(PAL))	Hi8	ME	LP	
BPF adjustment (WR5-11NS(NTSC), WR5-11CS(PAL))	Standard 8	MP	SP	BPF adjustment

Tape type:

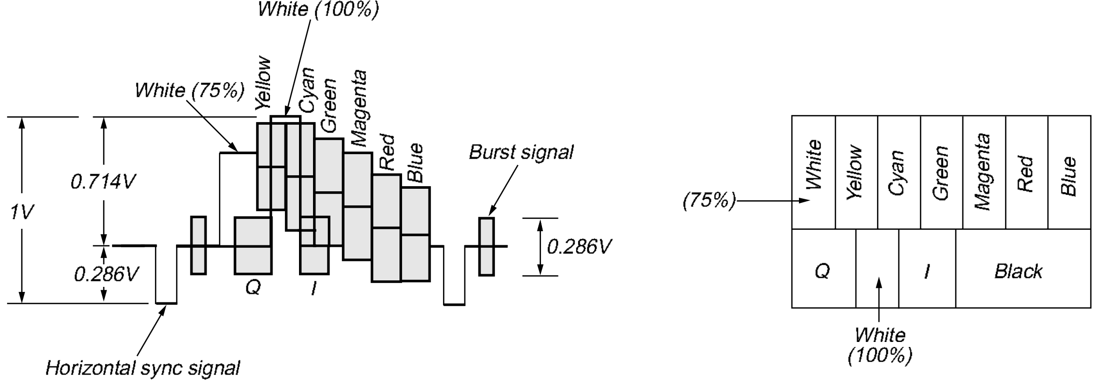
ME	Particle type metal tape
MP	Evaporated type metal tape

Table. 5-3-3.

Fig.5-3-3. shows the 75% color bar signals recorded on the alignment tape.

Note: Measure using the VIDEO terminal (Terminated at 75Ω).

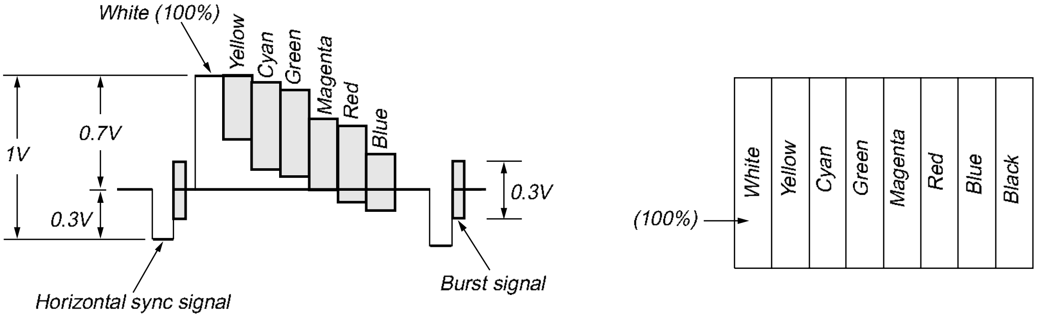
For NTSC model


White (100%)
White (75%)
Yellow
Cyan
Green
Magenta
Red
Blue
Burst signal
0.714V
1V
0.286V
Q
I
0.286V
Horizontal sync signal
(75%)
White
Yellow
Cyan
Green
Magenta
Red
Blue
Q
I
Black
White
(100%)

Color bar signal waveform

Color bar pattern

For PAL model


White (100%)
Yellow
Cyan
Green
Magenta
Red
Blue
1V
0.7V
0.3V
0.3V
Horizontal sync signal
Burst signal
(100%)
White
Yellow
Cyan
Green
Magenta
Red
Blue
Black

Color bar signal waveform

Color bar pattern

Fig. 5-3-3. Color bar signal of alignment tapes

3-1-6. Output Level and Impedance

Video output
Stereo minijack,
1Vp-p, 75Ω, unbalanced, sync negative

S video output
4-pin mini DIN
Luminance signal:
1Vp-p, 75Ω, unbalanced, sync negative
Chrominance signal:
0.286Vp-p, 75Ω, unbalanced (NTSC)
0.300Vp-p, 75Ω, unbalanced (PAL)

Audio output
Stereo minijack:
–7.5dBs, (at load impedance 47kΩ), impedance less than 2.2kΩ

3-1-7. Recording Mode (Standard 8/Hi8) switching

The record mode (Standard 8/Hi8) of this unit switches as shown in the following table. The playback mode (Standard 8/Hi8) switches automatically according to the recording mode of the tape played back.

Tape Used	Recording Mode
ME	Hi8
Hi8 MP	
MP	Standard 8

3-2. SYSTEM CONTROL SYSTEM ADJUSTMENT

1. Initialization of D, E, F, 7 Page Data

If the D, E, F, 7 page data is erased due to some reason, perform "1-2. INITIALIZATION OF D, E, F, 7 PAGE DATA", of "5-1. CAMERA SECTION ADJUSTMENT"

3-3. SERVO SYSTEM ADJUSTMENT

1. CAP FG Offset Adjustment (VC-251 board)

Set the Cap FG signal duty cycle to 50% to establish an appropriate capstan servo. If deviated, the uneven rotation of capstan and noise can occur in the LP mode.

Mode	Camera recording (SP mode)
Subject	Arbitrary
Measurement Point	CAP FG (Pin ⑧ of CN713 or Pin ⑧ of CPC connector of FP-262 flexible)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	64
Specified value	Duty = 50 ± 1 %

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	6	01	81	Set the data, and press PAUSE button.
3	6	02		Check that the data changes to "01".
4	6	01	00	Set the data, and press PAUSE button.
5				Check that Duty of CAP FG signal satisfies the specified value. If not, repeat steps 2 to 5.
6	0	01	01	Set the data.

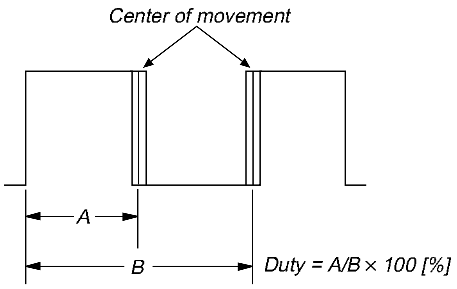


Fig. 5-3-4.

2. Switching Position Adjustment (VC-251 Board)

If deviated in this case causes switching noise or jitter on the played back screen.

Mode	Playback
Signal	Alignment tape: For tracking adjustment (WR5-1NP (NTSC)) (WR5-1CP (PAL))
Measurement Point	CH1: SWP (Pin ⑯ of CN713 or Pin ⑯ of CPC connector of FP-262 flexible) CH2: PB RF (Pin ⑨ of CN713 or Pin ⑨ of CPC connector of FP-262 flexible)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	62, 63
Specified Value	t1= 0 ± 10µ sec

Note: NTSC model: CCD-TR618/TR818/TRV49/TRV58/TRV68/TRV78/
TRV88/TRV98
PAL model: CCD-TR618E/TR718E/TR728E/TRV49E/TRV58E/
TRV59E/TRV78E/TRV98E

Adjusting Method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	F	22	C0	Set the data, and press PAUSE button.
3	F	62		Change the data and minimize "t1". (Coarse adjustment)
4	F	62		Press PAUSE button
5	F	63		Change the data and adjust so that the switching position (t1) becomes the specified value. (Fine adjustment)
6	F	63		Press PAUSE button
7	F	22	80	Set the data, and press PAUSE button.
8	0	01	01	Set the data.

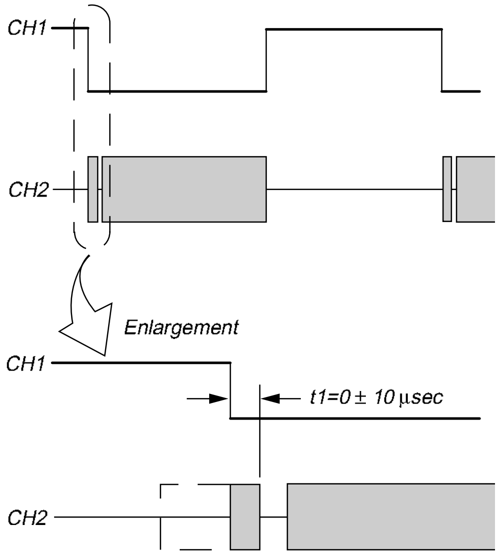


Fig. 5-3-5.

3-4. VIDEO SYSTEM ADJUSTMENTS

Video system adjustments must be performed in the following order.

Note: NTSC model: CCD-TR618/TR818/TRV49/TRV58/TRV68/TRV78/
TRV88/TRV98
PAL model: CCD-TR618E/TR718E/TR728E/TRV49E/TRV58E/
TRV59E/TRV78E/TRV98E

[Adjusting Order]

1. 28MHz origin oscillation adjustment
2. AFC fo adjustment
3. Filter fo adjustment
4. Y OUT level adjustment
5. C OUT level adjustment
6. REC Y current adjustment
7. REC C/REC AFM current adjustment

1. 28 MHz Origin Oscillation Adjustment (VC-251 board)

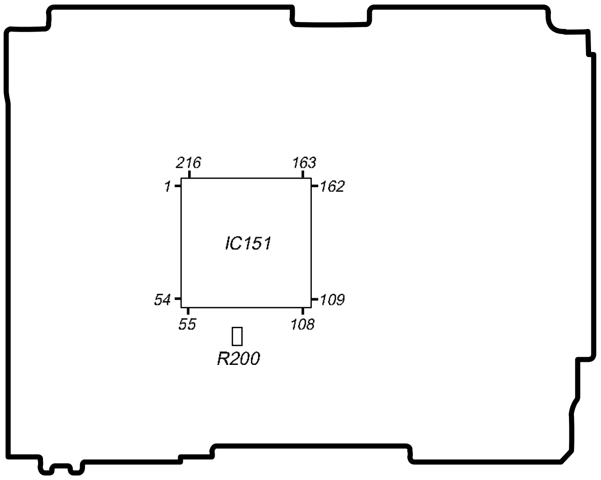
Set the frequency of the clock for synchronization.
If deviated, the synchronization will be disrupted and the color will become inconsistent.

Mode	VTR stop
Signal	No signal
Measurement Point	R200 (Pin (79) of IC151)
Measuring Instrument	Frequency counter
Adjustment Page	F
Adjustment Address	4D
Specified Value	f=3579545 ± 17Hz (NTSC) f=4433594 ± 17Hz (PAL)

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	6	61	30	Set the data.
3	2	01	41	Set the data, and press PAUSE button.
4	F	4D		Change the data and set the frequency (f) to the specified value.
5	F	4D		Press PAUSE button.
6	2	01	00	Set the data, and press PAUSE button.
7	6	61	10	Set the data.
8	0	01	00	Set the data.

VC-251 BOARD



2. AFC fo Adjustment (VC-251 board)

Adjust the pull-in range of the A/D converted clock generator during playback.

Mode	VTR stop
Signal	No signal
Adjustment Page	F
Adjustment Address	65

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	F	65	50	Set the data, and press PAUSE button.
3	2	01	4D	Set the data, and press PAUSE button.
4				Wait for 0.5 sec.
5	6	01	C5	Set the data, and press PAUSE button.
6	6	02		Check that the data changes to “01”. (Note)
7	2	01	00	Set the data, and press PAUSE button.
8	6	01	00	Set the data, and press PAUSE button.
9	0	01	00	Set the data.

Note: The adjustment data will be automatically input to page: F, address: 65.

3. Filter fo Adjustment (VC-251 board)

Adjust the fo frequency of the IC151 built-in filter.

Mode	VTR stop
Signal	No signal
Measurement Point	IR VIDEO (Pin ⑭ of CN713 or Pin ⑭ of CPC connector of FP-262 flexible)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	66
Specified Value	Minimum residual chroma signal components (A= Bellow 35mV)

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	2	01	4F	Set the data, and press PAUSE button.
3	2	05	40	Set the data,.
4	F	66		Change the data and minimize the residual chroma signal components (A). (The data should be “70” to “7F”.)
5	F	66		Press PAUSE button.
6	2	01	00	Set the data, and press PAUSE button.
7	2	05	00	Set the data,.
8	0	01	00	Set the data.

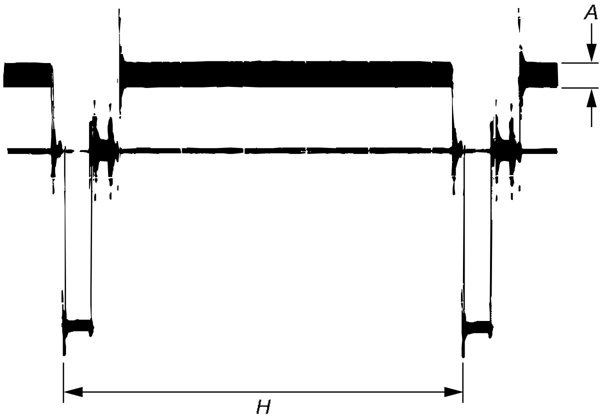


Fig. 5-3-6.

4. Y OUT Level Adjustment (VC-251 board)

Set the Y signal output level. (Adjust the D/A converter out put level of IC151.)

Mode	VTR stop
Signal	No signal
Measurement Point	Y signal terminal of S VIDEO terminal (75Ω terminated)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	67
Specified Value	A=286 ± 5mV (NTSC) A=300 ± 5mV (PAL)

Note1: Insert a plug into the S video terminal.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	2	01	41	Set the data, and press PAUSE button.
3	6	61	30	Set the data,.
4	F	67		Change the data and set the SYNC level (A) to the specified value.
5	F	67		Press PAUSE button.
6	2	01	00	Set the data, and press PAUSE button.
7	6	61	10	Set the data.
8	0	01	00	Set the data.

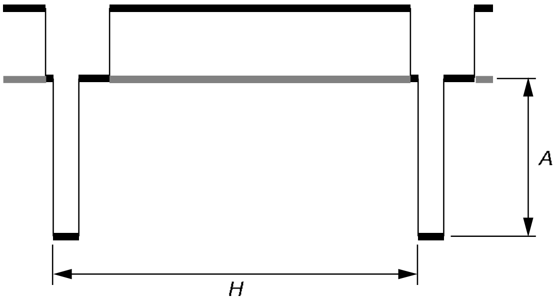


Fig. 5-3-7.

5. C OUT Level Adjustment (VC-251 board)

Set the chroma signal output level. (Adjust the D/A converter out put level of IC151.)

Mode	VTR stop
Signal	No signal
Measurement Point	Chroma signal terminal of S VIDEO terminal (75Ω terminated)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	68
Specified Value	A=286 ± 5mV (NTSC) A=300 ± 5mV (PAL)

Note1: Insert a plug into the S video terminal.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	2	01	41	Set the data, and press PAUSE button.
3	6	61	30	Set the data,.
4	F	68		Change the data and set the burst level (A) to the specified value.
5	F	68		Press PAUSE button.
6	2	01	00	Set the data, and press PAUSE button.
7	6	61	10	Set the data,.
8	0	01	00	Set the data.

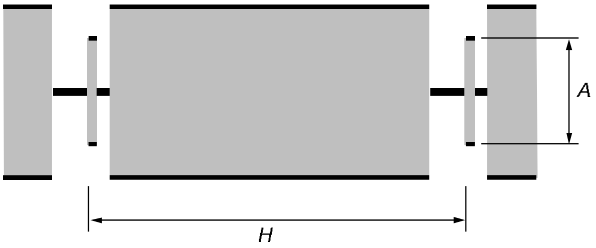


Fig. 5-3-8.

6. REC Y Current Adjustment (VC-251 board)

Adjust the Y FM signal recording current.

Mode	VTR recording (SP mode)	
Signal	No signal	
Measurement Point	REC RF (Pin ⑮ of CN713 or Pin ⑮ of CPC connector of FP-262 flexible)	
Measuring Instrument	Oscilloscope (20 MHz BW LIMIT: OFF)	
Adjustment Page	F	7
Adjustment Address	6A, 6B	F9
Specified Value	A=235 ± 5mV (NTSC) A=280 ± 5mV (PAL)	

Note1: Don't disconnect the DC power supply of the camcorder during the following adjustments.
When the following symptom occurs, reset the data of D page to the values written down.
1) The power is shut off so that unit cannot operate.

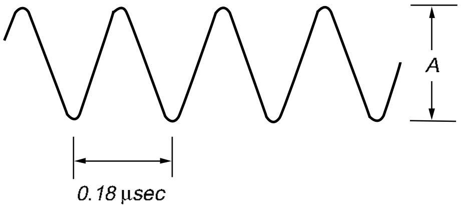


Fig. 5-3-9.

Adjusting method:

Order	Page	Address	Data	Procedure
1				Set to the stop mode.
2	0	01	01	Set the data.
3	D	14		Write down the data.
4	D	14		Set the following data, and press PAUSE button. 06 (NTSC), 26 (PAL)
5	D	15		Write down the data.
6	D	15		Set the following data, and press PAUSE button. 6D (NTSC), 6F (PAL)
7				Set to VTR recording mode. (Note2)
8	E	FB		Write down the data.
9	E	FB	06	Set the data, and press PAUSE button.
10	F	71		Write down the data.
11	F	71	00	Set the data, and press PAUSE button.
12	2	01	41	Set the data, and press PAUSE button.
13	6	63	01	Set the data.
14	F	6B		Change the data and set the Y signal level (A) to the specified value.
15	F	6B		Read the data, and this data is named D_{6B}.
16	F	6A	D_{6B}	Set the data, and press PAUSE button.
17				Convert D_{6B} to decimal notation, and obtain D_{6B}'. (Note3)
18				Calculate D_{F9}' using following equations (Decimal calculation) When $D_{6B}' \leqq 243$ $D_{F9}' = D_{6B}' + 12$ When $D_{6B}' > 243$ $D_{F9}' = 255$
19				Convert D_{F9}' to a hexadecimal number, and obtain D_{F9}. (Note3)
20	7	F9	D_{F9}	Set the data, and press PAUSE button.
21	6	63	00	Set the data.
22	2	01	00	Set the data, and press PAUSE button.
23	F	71		Set the data written down at step 10, and press PAUSE button.
24	E	FB		Set the data written down at step 8, and press PAUSE button.
25	D	14		Set the data written down at step 3, and press PAUSE button.
26	D	15		Set the data written down at step 5, and press PAUSE button.
27	0	01	00	Set the data.

Note2: Use the REC buttons of the adjustment remote commander (with the HOLD switch set in the OFF position).

Note3: Refer to "Table 5-4-1. Hexadecimal-decimal Conversion Table".

7. REC C/AFM Current Adjustment

7-1. Preparations

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	D	14		Write down the data.
3	D	14		Set the following data, and press PAUSE button. 06 (NTSC), 26 (PAL)
4	D	15		Write down the data.
5	D	15		Set the following data, and press PAUSE button. 6D (NTSC), 6F (PAL)

Note: Don't disconnect the DC power supply of the camcorder during the following adjustments.
When the following symptom occurs, reset the data of D page to the values written down.
1) The power is shut off so that unit cannot operate.

7-2. REC C Current Check (VC-251 board)

Check the recording current level of the REC Chroma signal. If it is too low, chroma signal noise in played back picture will be increased. If too high, Y signal noises will increase and white modulation noises will be produced.

Mode	VTR recording (SP mode)
Signal	No signal
Measurement Point	REC RF (Pin ⑮ of CN713 or Pin ⑮ of CPC connector of FP-262 flexible)
Measuring Instrument	Oscilloscope (20 MHz BW LIMIT: OFF)
Specified Value	A=50.8 ± 3.0mV (NTSC) A=54.0 ± 3.0mV (PAL)

Adjusting method:

Order	Page	Address	Data	Procedure
1				Insert a Hi8 ME tape, and set to VTR recording mode. (Note)
2	0	01	01	Set the data.
3	2	01	41	Set the data, and press PAUSE button.
4	6	61	30	Set the data.
5	E	FB		Write down the data.
6	E	FB	05	Set the data, and press PAUSE button.
7	F	71		Write down the data.
8	F	71	00	Set the data, and press PAUSE button.
9				Check that the REC chroma signal level (A) satisfies the specified value, and write down the signal level.
10	F	71		Set the data written down at step 7, and press PAUSE button.
11	E	FB		Set the data written down at step 5, and press PAUSE button.
12	6	61	10	Set the data.
13	2	01	00	Set the data, and press PAUSE button.
14	0	01	00	Set the data.
15				Perform "REC AFM Current Adjustment" and "Processing after completed adjustment".

Note: Use the REC buttons of the adjustment remote commander (with the HOLD switch set in the OFF position).

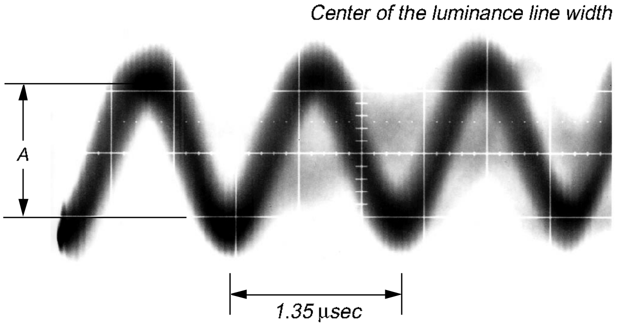


Fig. 5-3-10.

7-3. REC AFM Current Adjustment (VC-251 board)

Set the recording levels of the REC AFM signal. If the level is too low, the audio S/N will be deteriorated. If too high, color beets will be produced on the self-recording / playback image.

Mode	VTR recording (SP mode)
Signal	No signal
Measurement Point	REC RF (Pin ⑮ of CN713 or Pin ⑮ of CPC connector of FP-262 flexible)
Measuring Instrument	Oscilloscope (20 MHz BW LIMIT: OFF)
Adjustment Page	F
Adjustment Address	71
Specified Value	NTSC model: A= (REC Chroma signal level) × 0.292 ± 0.9mV (Note) PAL model: A= (REC Chroma signal level) × 0.309 ± 0.9mV (Note)

Note1: REC chroma signal level is written down at step 9 of "REC C Current Check".

Adjusting method:

Order	Page	Address	Data	Procedure
1				Insert a Hi8 ME tape, and set to recording mode. (Note2)
2	0	01	01	Set the data.
3	2	01	41	Set the data, and press PAUSE button.
4	E	FB		Write down the data.
5	E	FB	07	Set the data, and press PAUSE button.
6	F	71		Change the data and set the REC AFM signal level (A) to the specified value.
7	F	71		Press PAUSE button.
8	E	FB		Set the data written down at step 4, and press PAUSE button.
9	2	01	00	Set the data, and press PAUSE button.
10	0	01	00	Set the data.
11				Perform "Processing after completed adjustment".

Note2: Use the REC buttons of the adjustment remote commander (with the HOLD switch set in the OFF position).

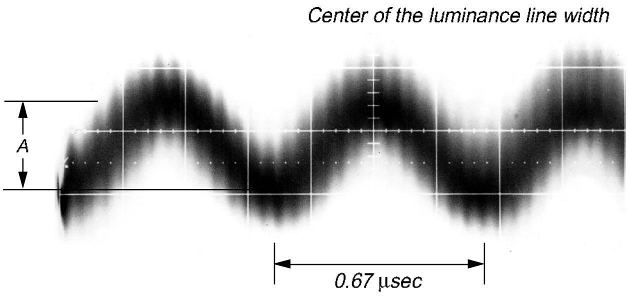


Fig. 5-3-11.

7-4. Processing after completed adjustment

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	D	14		Set the data written down at step 2 of "7-1. Preparations", and press PAUSE button.
3	D	15		Set the data written down at step 4 of "7-1. Preparations", and press PAUSE button.
4	0	01	00	Set the data.

3-5. IR TRANSMITTER ADJUSTMENTS (CCD- TRV98)

Adjust using the IR receiver jig (J-6082-383-A).

Note: If the distance between the IR receiver jig and the camcorder is below 1m, cover the LASER LINK emitter with a ND filter. (For example, when the distance is 30cm to 50cm, cover the LASER LINK emitter with a ND filter 1.0.)

Switch setting:

LASER LINK .... ON (Red LED is lit)

1. IR Video Carrier Frequency Adjustment (MI-041 board)

Mode	VTR stop
Signal	Arbitrary
Measurement Point	Pin ⑤ of CN003 of IR receiver jig (RF) (Or Pin ⑯ of IC3901 of MI-041 board)
Measuring Instrument	Frequency counter
Adjustment Page	F
Adjustment Address	80
Specified Value	f = 11.85 ± 0.05 MHz (*1) f = 11.55 ± 0.05 MHz (*2)

*1: IC3901 of MI-041 board is LA9511.
*2: IC3901 of MI-041 board is AN2920.

Connection of Equipment:
Connect the measuring device as shown in the following figure, and adjust.

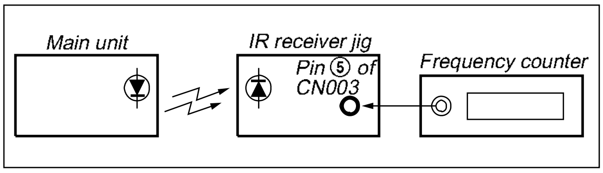


Fig. 5-3-12.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	2	01	37	Set the data, and press PAUSE button.
3	F	80		Change the data, and set the video carrier frequency (f) to the specified value.
4	F	80		Press PAUSE button.
5	2	01	00	Set the data, and press PAUSE button.
6	0	01	00	Set the data.

2. IR Video Deviation Adjustment (MI-041 board)

Mode	VTR stop
Signal	Arbitrary
Measurement Point	VIDEO OUT terminal of IR receiver jig (Terminated at 75Ω)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	7E
Specified Value	A = 0.87 ± 0.05 V

Connection of Equipment:
Connect the measuring device as shown in the following figure, and adjust.

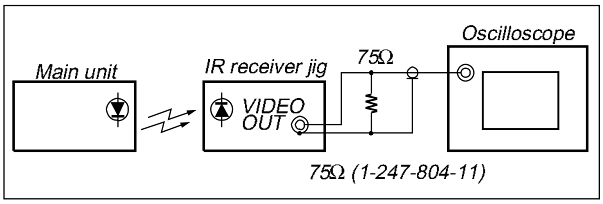


Fig. 5-3-13.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	2	01	39	Set the data, and press PAUSE button.
3	F	7E		Change the data, set the video signal amplitude (A) to the specified value.
4	F	7E		Press PAUSE button.
5	2	01	00	Set the data, and press PAUSE button.
6	0	01	00	Set the data.

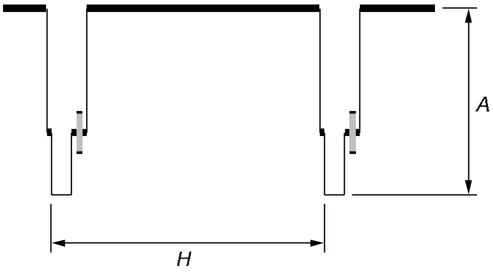


Fig. 5-3-14.

3. IR Audio Deviation Adjustment (MI-041 board)

Mode	Playback
Signal	Alignment tape: For checking operation (WR5-5NSP(NTSC))
Measurement Point	AUDIO L terminal and AUDIO R terminal of IR receiver jig (Terminated at 47kΩ)
Measuring Instrument	Audio level meter
Adjustment Page	F
Adjustment Address	7F
Specified Value	Signal level: –7.5 ± 2.0 dBs

Note: This adjustment should be carried out upon completion of the audio system adjustments.

Connection of Equipment:
Connect the measuring device as shown in the following figure, and adjust.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2				Connect the audio level meter to the AUDIO L terminal of the IR receiver jig.
3	F	7F		Change the data and set the 400Hz audio signal level to the specified value.
4	F	7F		Press PAUSE button.
5				Connect the audio level meter to the AUDIO R terminal of the IR receiver jig.
6	F	7F		Check that the 400Hz audio signal level is within the specified value. If outside, repeat from step 2.
7	0	01	00	Set the data.

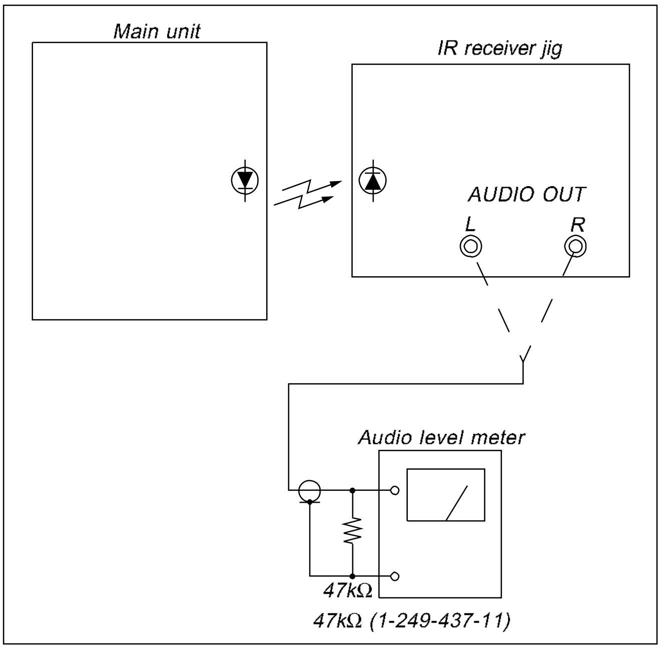


Fig. 5-3-15.

3-6. AUDIO SYSTEM ADJUSTMENTS

[Connecting the measuring instruments for the audio]

Connect the audio system measuring instruments in addition to the video system measuring instruments as shown in Fig. 5-3-16.

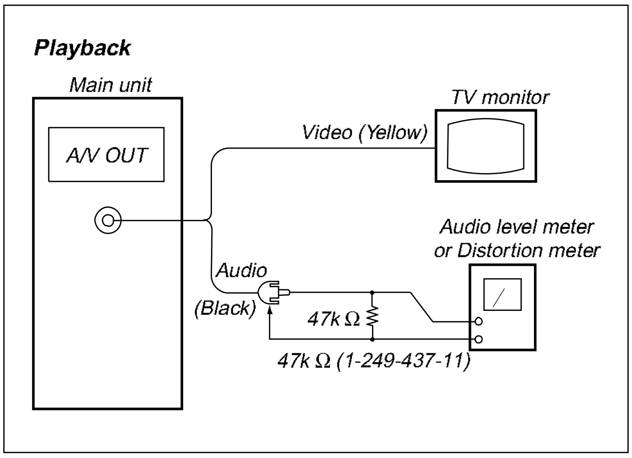


Fig. 5-3-16.

1. 1.5MHz Deviation Adjustment (VC-251 board)

Adjust to the optimum 1.5MHz audio FM signal deviation.
If the adjustment is not correct, its playback level will differ from that of other units.

Mode	Playback
Signal	Alignment tape: For checking operation (WR5-5NSP (NTSC)) (WR5-5CSP (PAL))
Measurement Point	Audio terminal of A/V OUT jack
Measuring Instrument	Audio level meter
Adjustment Page	F
Adjustment Address	7B
Specified Value	–7.5 ± 2.0 dBs

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	F	7B		Change the data and set the 400Hz audio signal level to the specified value.
3	F	7B		Press PAUSE button.
4	0	01	00	Set the data.

2. BPF fo Adjustment (VC-251 board)

Sets the BPF passing frequency of IC760 so that the AFM signal can separate from the playback RF signal properly. If deviated. the mono/stereo mode will be differentiated incorrectly, and noises and distortions will increase during high volume playback.

Mode	Playback
Signal	Alignment tape: For BPF adjustment (WR5-11NS (NTSC) (WR5-11CS (PAL))
Measurement Point	Audio terminal of A/V OUT jack
Measuring Instrument	Distortion meter
Adjustment Page	F
Adjustment Address	7D
Specified Value	The distortion rate should be minimum.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	F	7D		Change the data and minimize the distortion rate.
3	F	7D		Press PAUSE button.
4	0	01	00	Set the data.

5-4. SERVICE MODE

4-1. ADJUSTMENT REMOTE COMMANDER

The adjustment remote commander is used for changing the calculation coefficient in signal processing, EVR data, etc. The adjustment remote commander performs bi-directional communication with the unit using the remote commander signal line (LANC). The resultant data of this bi-directional communication is written in the non-volatile memory.

1. Using the Adjustment Remote Commander

1) Connect the adjustment remote commander to CN713 of VC-251 board or CPC connector of FP-262 flexible via CPC jig for BX/BK (J-6082-521-A). To operate the adjustment remote commander, connect the AC power adapter (8.4Vdc) to the DC IN jack of CPC jig for BX/BK, or connect the L series Info-LITHIUM battery to the battery terminal of CPC jig for BX/BK.
2) Set the HOLD switch of the adjustment remote commander to "HOLD" (SERVICE position). If it has been properly connected, the LCD on the adjustment remote commander will display as shown in Fig. 5-4-1.

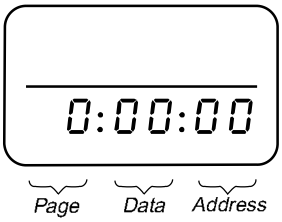


Fig. 5-4-1.

3) Operate the adjustment remote commander as follows.
   - Changing the page
     The page increases when the EDIT SEARCH+ button is pressed, and decreases when the EDIT SEARCH– button is pressed. There are altogether 16 pages, from 0 to F.

Hexadecimal notation	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
LCD Display	0	1	2	3	4	5	6	7	8	9	A	b	c	d	E	F
Decimal notation conversion value	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

   - Changing the address
     The address increases when the FF (▶▶) button is pressed, and decreases when the REW (◀◀) button is pressed. There are altogether 256 addresses, from 00 to FF.
   - Changing the data (Data setting)
     The data increases when the PLAY (▶) button is pressed, and decreases when the STOP (■) button is pressed. There are altogether 256 data, from 00 to FF.
   - Writing the adjustment data
     The PAUSE button must be pressed to write the adjustment data (D, E, F, 7 page) in the nonvolatile memory. (The new adjusting data will not be recorded in the nonvolatile memory if this step is not performed.)
4) After completing all adjustments, turn off the main power supply (8.4 V) once.

2. Precautions Upon Using the Adjustment Remote Commander

Mishandling of the adjustment remote commander may erase the correct adjustment data at times. To prevent this, it is recommended that all adjustment data be noted down before beginning adjustments and new adjustment data after each adjustment.

4-2. DATA PROCESS

The calculation of the DDS display and the adjustment remote commander display data (hexadecimal notation) are required for obtaining the adjustment data of some adjustment items. In this case, after converting the hexadecimal notation to decimal notation, calculate and convert the result to hexadecimal notation, and use it as the adjustment data. Indicates the hexadecimal-decimal conversion table.

Hexadecimal-decimal Conversion Table

Lower digit of hexadecimal / Upper digit of hexadecimal	0	1	2	3	4	5	6	7	8	9	A (A)	B (b)	C (c)	② D (d)	E (E)	F (F)
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
4	64	65	66	67	68	69	70	71	72	73	74	77	76	77	78	79
5	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
A (A)	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
① B (b)	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191
C (c)	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
D (d)	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
E (E)	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
F (F)	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

Note: The characters shown in the parenthesis ( ) shown the display on the adjustment remote commander.

(Example) If the DDS display or the adjustment remote commander shows BD (bd);
Because the upper digit of the adjustment number is B (b), and the lower digit is D (d), the meeting point "189" of ① and ② in the above table is the corresponding decimal number.

Table. 5-4-1.

4-3. SERVICE MODE

Note: After the completion of the all adjustments, cancel the service mode by either of the following ways.

1) Unplug the main power supply and remove the lithium battery. (In this case, date and time and menu setting have been set by users are canceled. Perform resetting.)
2) After data on page: D and F is restored, return data of the address: 01 on page: 0 to 00. And when data on page: 2 is changed, return the data to the original condition.

1. Test Mode Setting

Set/release each test mode. Set page: 0, address: 01, data: 01 before setting the data of page D and F.

Page F	Address 22

Data	Function
80	Normal
81	Test mode Various emergency prohibitions and releases Drum emergency, capstan emergency, loading motor emergency, reel emergency, tape top and end, DEW detection

Page D	Address 10

Data	Function
00	Normal
01	Camera power ON
02	VTR power ON
03	Camera + VTR power ON

* For page D and F, the data set will be recorded in the nonvolatile memory by pressing the PAUSE button on the adjustment remote commander. Take note that, in this case, the test mode will not be released even if the main power has been turned off.

* Be sure to return the data of page: F, address: 22 to 80, and the data of page : D, address: 10 to 00 after completing adjustments/ repairs and press the PAUSE button of the adjustment remote commander. And set page: 0, address: 01, data: 00.

2. Emergency Memory Address

Page F	Address 10 to 1B

Address	Contents
10	1st EMG code
12	Upper: MSW code when the mechanism starts shifting the 1st time Lower: MSW code when the 1st emergency occurs
13	Lower: Target MSW code of the 1st emergency occurs
14	2nd EMG code
16	Upper: MSW code when the mechanism starts shifting the 2nd time Lower: MSW code when the 2nd emergency occurs
17	Lower: Target MSW code of the 2nd emergency occurs
18	Last EMG code
1A	Upper: MSW code when the mechanism starts shifting the last time Lower: MSW code when the last emergency occurs
1B	Lower: Target MSW code of the last emergency occurs

When there are no emergency, data 00 will be written in the above addresses (10 to 1B). When the first emergency occurs, the data corresponding to the emergency will be written in the address (10 to 13) for this first emergency. In the same way, when the second emergency occurs, the data corresponding to the emergency will be written in the address (14 to 17) for this second emergency.
The data corresponding to the emergency occurring the last will be written in the address (18 to 1B) for this last emergency.
Therefore the data of addresses 18 to 1B are renewed each time an emergency occurs.

Note 1: Be sure to rewrite the data of addresses 10 to 1B to 00 after repairs/adjustments.
Note 2: When rewriting the data, be sure to press the PAUSE button of the remote commander after setting the data.

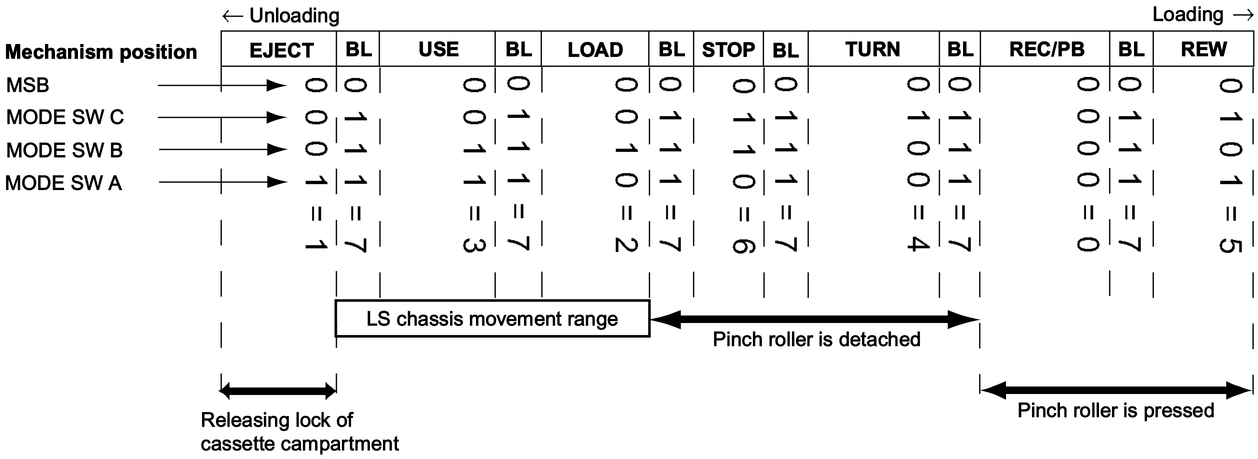
2-1. EMG code (Emergency code)

The codes shown in the following table which correspond to errors that occur are recorded in addresses 10, 14, and 18.

Code	Type of Emergency
00	No error
10	Loading motor time-out during load
11	Loading motor time-out during unload
20	T reel emergency (reel slack) during unloading
21	S reel emergency (reel slack) during unloading
22	T reel emergency
23	S reel emergency
30	FG emergency at the start up of the capstan
31	FG emergency during the normal rotation of the capstan
40	FG emergency at the start up of the drum
41	PG emergency at the start up of the drum
42	FG emergency during the normal rotation of the drum
43	PG emergency during the normal rotation of the drum
44	Phase emergency during the normal rotation of the drum

2-2. MSW codes

- The lower parts of the data of addresses 12, 16 and 1A represent the MSW codes (mode switch, mechanism position) when errors occurs.
- The upper parts of the data of addresses 12, 16 and 1A represent, when the mechanism position is to be moved, the MSW codes at the start of movement (when moving the loading motor).
- The lower parts of the data of addresses 13, 17 and 1B represent the MSW codes of the desired movement when the mechanism position is to be moved.

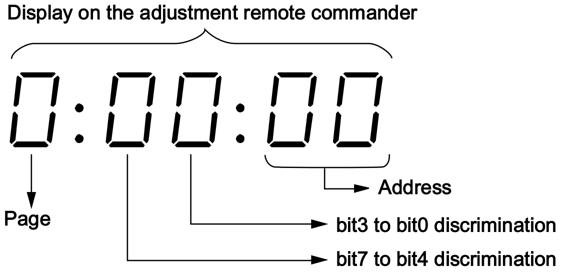


Mechanism position	EJECT	BL	USE	BL	LOAD	BL	STOP	BL	TURN	BL	REC/PB	BL	REW
MSB	0	0	0	0	0	0	0	0	0	0	0	0	0
MODE SW C	0	1	0	1	0	1	1	1	1	1	0	1	1
MODE SW B	0	1	1	1	1	1	1	1	0	1	0	1	0
MODE SW A	1	1	1	1	0	1	0	1	0	1	0	1	1
	= 1	= 7	= 3	= 7	= 2	= 7	= 6	= 7	= 4	= 7	= 0	= 7	= 5

Mechanism Position	MSW Code	Contents
EJECT	1	Position at which the cassette compartment lock is released. The mechanism will not move any further in the unloading direction.
BL	7	BLANC code. Between two codes. The mechanism will not be stopped by this code while it is operating.
USE	3	EJECT completion position. When the cassette is ejected, the mechanism will stop at this position.
LOAD	2	Code during loading/unloading. Code that is used while the LS chassis is moving.
STOP	6	Normal stop position. The pinch roller separates, the tension regulator returns, and the brakes of both reels turn on.
TURN	4	Position at which is used when the pendulum gear swings from S to T or from T to S.
RECP/PB	0	PB, REC, CUE, REV, PAUSE, FF positions. The pinch roller is pressed and tension regulator is on.
REW	5	REW position. REW are carried at this position. The mechanism will not move any further in the loading direction.

3. Bit Value Discrimination

Bit values must be discriminated using the display data of the adjustment remote commander for the following items. Us the table below to discriminate if the bit value is “1” or “0”.


Display on the adjustment remote commander
0:00:00
Address
Page
bit3 to bit0 discrimination
bit7 to bit4 discrimination

(Example) If the remote commander display is “8E”, bit value from bit 7 to bit 4 can be discriminated from the column Ⓐ, and those from bit 3 to bit 0 from column Ⓑ.

	Display on the adjustment remote commander	Bit values			
		bit3 or bit7	bit2 or bit6	bit1 or bit5	bit0 or bit4
	0	0	0	0	0
	1	0	0	0	1
	2	0	0	1	0
	3	0	0	1	1
	4	0	1	0	0
	5	0	1	0	1
	6	0	1	1	0
	7	0	1	1	1
Ⓐ	8	1	0	0	0
	9	1	0	0	1
	A (A)	1	0	1	0
	B (b)	1	0	1	1
	C (C)	1	1	0	0
	D (d)	1	1	0	1
Ⓑ	E (E)	1	1	1	0
	F (F)	1	1	1	1

4. Switch check (1)

Page 2	Address 43

Bit	Function	When bit value = 1	When bit value = 0
0	POWER SW (VTR MODE SW) (SS-1000 block)	OFF	ON (PLAYER)
1	POWER SW (CAM MODE SW) (SS-1000 block)	OFF	ON (CAMERA)
2	START/STOP SW (SS-1000 block)	OFF	ON
3	EJECT SW (FK-1000 block)	OFF	ON
4	CC DOWN SW (Mechanism chassis)	OFF (UP)	ON (DOWN)
5			
6			
7			

Using method:

1) Select page: 2, address: 43.
2) By discriminating the bit value of display data, the state of the switch can be discriminated.

5. Switch check (2)

Page 2	Address 49

Bit	Function	When bit value = 1	When bit value = 0
6	A/V OUT jack (FP-257 flexible)	Used	Not used
7	S VIDEO jack (FP-257 flexible)	Not used	Used

Using method:

1) Select page: 2, address: 49.
2) By discriminating the bit value of display data, the state of the switch can be discriminated.

6. Switch check (3)

(TRV model: CCD-TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)

Page 2	Address 45

Bit	Function	When bit value = 1	When bit value = 0
1	HEADPHONE jack (CF-1000 block)	Used	Not used

Using method:

1) Select page: 2, address: 45.
2) By discriminating the bit value of display data, the state of the switch can be discriminated.

7. Switch check (4)

Page 2	Address 60 to 65

Using method:

1) Select page: 2, address: 60 to 65.
2) By discriminating the display data, the pressed key can be discriminated.

Address	Data							
	00 to 0C	0D to 24	25 to 3F	40 to 5D	5E to 81	82 to AA	AB to D7	D8 to FF
60 (KEY AD0) (IC4803 (93))	SUPER LASER LINK (FK-1000) *1	LIGHT (FK-1000) *2	STOP (FK-1000)	FF (FK-1000)				No key input
61 (KEY AD1) (IC4803 (94))			PAUSE (FK-1000)	REW (FK-1000)	PLAY (FK-1000)			No key input
62 (KEY AD2) (IC4803 (95))	MENU (CF-077 S002) (CF-1000) *4	EXPOSURE (CF-077 S004) (CF-1000) *4	MENU EXECUTE (CF-077 S006) (CF-1000) *4	TITLE (CF-077 S007) (CF-1000) *4	VOLUME + (CF-1000) *4	VOLUME – (CF-1000) *4	BACKLIGHT (CF-077 S009) (CF-1000) *4	No key input
63 (KEY AD3) (IC4803 (96))		DATA (CF-077 S005) (CF-1000) *4				COUNTER RESET (CF-077 S008) (CF-1000) *4	PANEL CLOSE (S902) *3	PANEL OPEN (S902) *3
64 (KEY AD4) (IC4803 (97))	TIME (CF-077 S003) (CF-1000) *4		END SEARCH (CF-1000) *4	DISPLAY (CF-1000) *4		FADER (CF-077 S011) (CF-1000) *4	FOCUS (CF-077 S010) (CF-1000) *4	No key input
65 (KEY AD5) (IC4803 (98))	PANEL REVERSE (PR-10500) *3							PANEL NORMAL (PR-10500) *3

*1: LASER LINK model (CCD-TRV98)

*2: Video light model (CCD-TR618/TR618E/TR718E/TR728E/TR818/TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)

*3: TRV model (CCD-TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)

*4: CF-1000 block: TRV model
CF-077 board: TR model

8. Record of Use check

Note: When replacing the drum assembly, initialize the data of address: A2 to A4.
When replacing the video light, initialize the data of address: E0 to E2.

Page 2	Address A2 to AA, E0 to E2

Address	Function		Remarks
A2	Drum rotation counted time (BCD code)	Hour (H)	1000th place digit and 100th place digit of counted time (decimal digit)
A3		Hour (L)	10th place digit and 1st place digit of counted time (decimal digit)
A4		Minutes	
A5	User initial power on date (BCD code)	Year	After setting the clock, set the date of power on next
A6		Month	
A7		Day	
A8	Final condensation occurrence date (BCD code)	Year	
A9		Month	
AA		Day	
E0	Video light counted time (BCD code)	Hour (H)	1000th place digit and 100th place digit of counted time (decimal digit)
E1		Hour (L)	10th place digit and 1st place digit of counted time (decimal digit)
E2		Minutes	

Using method:

1) The record of use data is displayed at page: 2, addresses: A2 to AA and E0 to E2.
Note: This data will be erased (reset) when the cabinet (R) assembly (VC-251 board CN709 (24P)) is removed.

Initializing method:

1) Using the adjustment remote commander, select the object address and set data: 00.

9. Record of Self-diagnosis check

Page 2	Address B0 to C6

Address	Self-diagnosis code
B0	“Repaired by” code (Occurred 1st time) *1
B1	“Block function” code (Occurred 1st time)
B2	“Detailed” code (Occurred 1st time)
B4	“Repaired by” code (Occurred 2nd time) *1
B5	“Block function” code (Occurred 2nd time)
B6	“Detailed” code (Occurred 2nd time)
B8	“Repaired by” code (Occurred 3rd time) *1
B9	“Block function” code (Occurred 3rd time)
BA	“Detailed” code (Occurred 3rd time)
BC	“Repaired by” code (Occurred 4th time) *1
BD	“Block function” code (Occurred 4th time)
BE	“Detailed” code (Occurred 4th time)
C0	“Repaired by” code (Occurred 5th time) *1
C1	“Block function” code (Occurred 5th time)
C2	“Detailed” code (Occurred 5th time)
C4	“Repaired by” code (Occurred the last time) *1
C5	“Block function” code (Occurred the last time)
C6	“Detailed” code (Occurred the last time)

*1 : “01”→“C”, “03”→“E”

Using method:

1) The past self-diagnosis codes are displayed at page: 2, addresses: BC to C6. Refer to “SELF-DIAGNOSIS FUNCTION” for detail of the self-diagnosis code.
   Note: This data will be erased (reset) when the cabinet (R) assembly (VC-251 board CN709 (24P)) is removed.

SECTION 6
REPAIR PARTS LIST

6-1. EXPLODED VIEWS

NOTE:

- -XX, -X mean standardized parts, so they may have some differences from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.

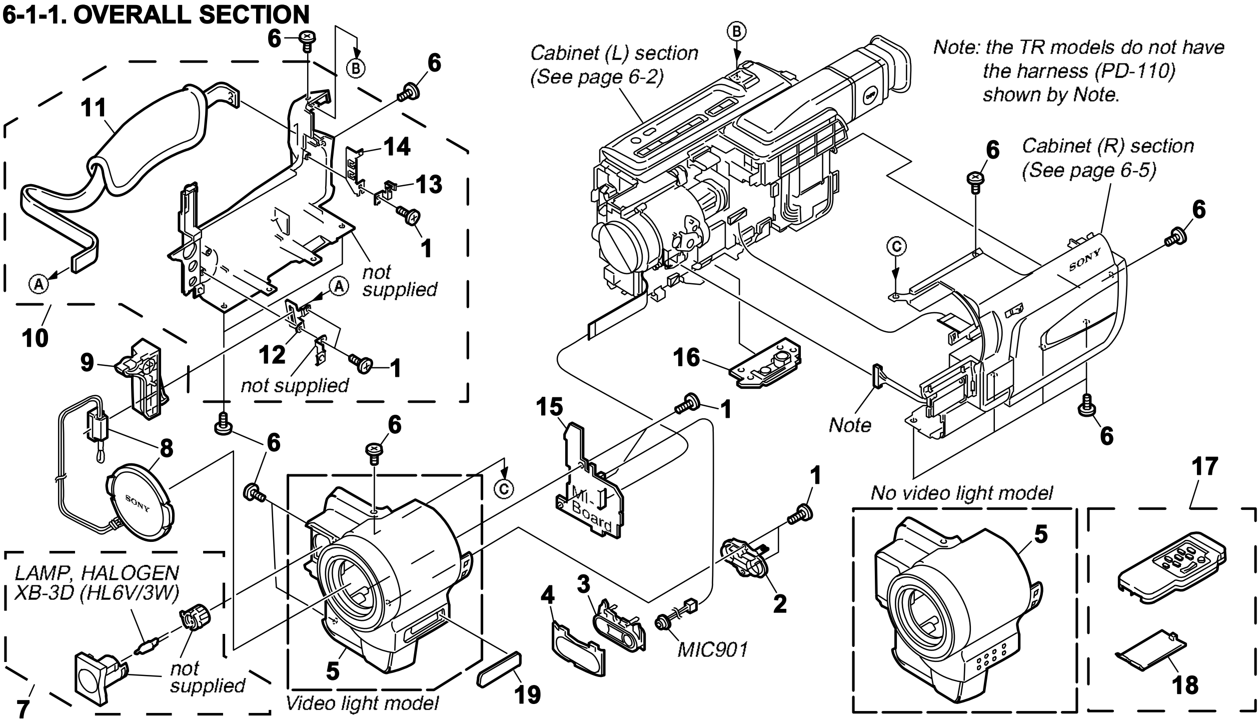
- Abbreviation

CND : Canadian model
HK : Hong Kong model
KR : Korea model
JE : Tourist model
AUS : Australian model
CN : Chinese model
BR : Brazilian model
AR : Argentina model

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

6-1-1. OVERALL SECTION



Cabinet (L) section (See page 6-2)

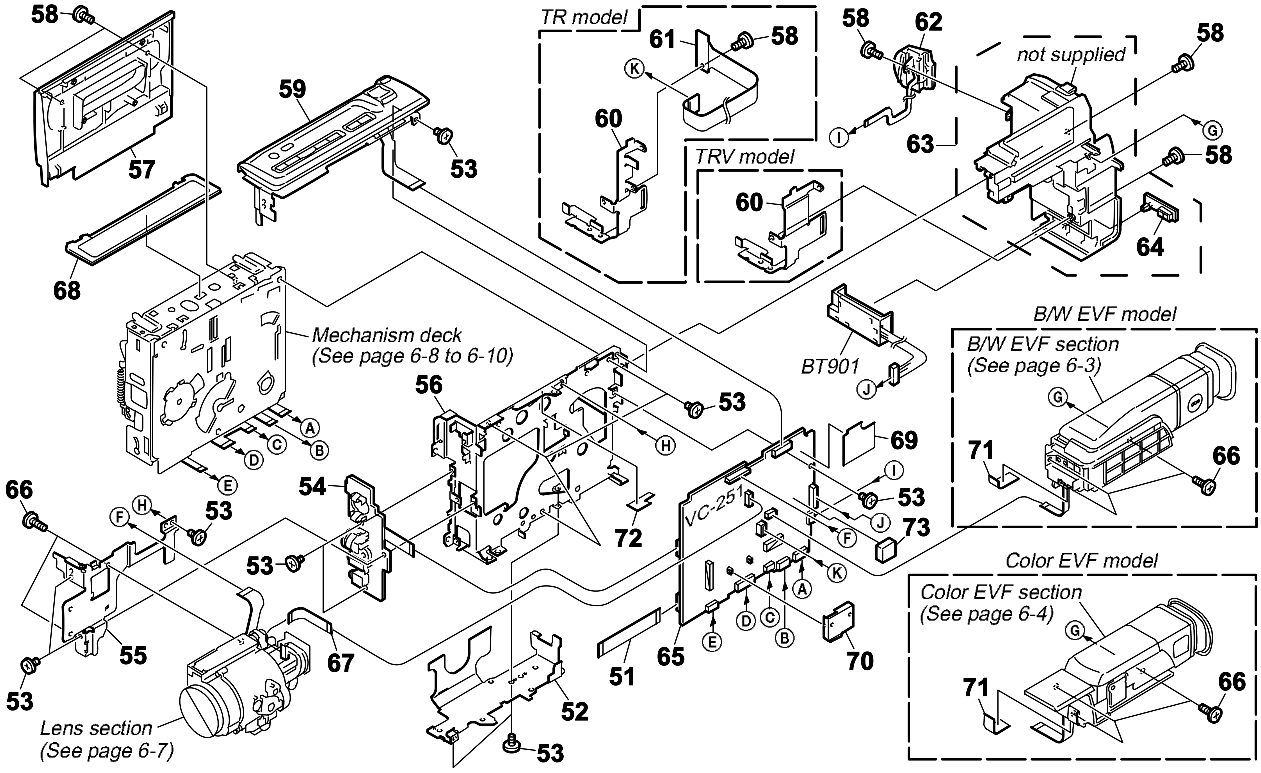
Note: the TR models do not have the harness (PD-110) shown by Note.

Cabinet (R) section (See page 6-5)

TR model :CCD-TR618/TR618E/TR718E/TR728E/TR818
Video light model :CCD-TR618/TR618E/TR718E/TR728E/TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E
No video light model :CCD-TR818

Ref. No.	Part No.	Description	Remarks
1	3-948-339-61	TAPPING	
2	3-065-468-01	RETAINER (REAR), MICROPHONE	
3	3-065-467-11	RETAINER (FRONT), MICROPHONE	
* 4	3-065-470-01	CUSHION (10), MICROPHONE	
5	X-3951-213-1	PANEL(10) ASSY, F (TRV88)	
5	X-3951-214-1	PANEL(10) ASSY, F (TR728E)	
5	X-3951-215-1	PANEL(10) ASSY, F (TR818)	
5	X-3951-216-1	PANEL(10) ASSY, F (TRV98)	
5	X-3951-217-1	PANEL(10) ASSY, F (TR618/TR618E)	
5	X-3951-218-1	PANEL(10) ASSY, F (TRV59E)	
5	X-3951-219-1	PANEL(10) ASSY, F (TR718E)	
5	X-3951-221-1	PANEL(10) ASSY, F (TRV68)	
5	X-3951-368-1	PANEL(10) ASSY, F (TRV78/TRV78E/TRV98E)	
5	X-3951-383-1	PANEL(10) ASSY, F (TRV49/TRV49E)	
5	X-3951-384-1	PANEL(10) ASSY, F (TRV58/TRV58E)	
6	3-067-347-01	MI SCREW M2 (H)	
7	1-518-723-21	LIGHT, VIDEO (TR618/TR618E/TR718E/TR728E/TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)	
8	X-3949-376-1	CAP(N) ASSY, LENS	
9	3-065-433-01	COVER(10), JACK	
10	X-3951-193-1	CABINET L (10) ASSY	
11	3-052-815-01	BELT(ES), GRIP	
* 12	3-065-455-01	STOPPER (FRONT) (10), BELT	
* 13	3-065-457-01	PLATE REAR (10), L GROUND	
14	3-058-622-01	STOPPER (REAR), BELT	
15	A-7074-659-A	MI-040 (L0) BOARD, COMPLETE (TR618/TR618E/TR718E)	
15	A-7074-661-A	MI-040 (MM0) BOARD, COMPLETE (TR818)	
15	A-7074-665-A	MI-041 (MMI) BOARD, COMPLETE (TRV98)	
15	A-7074-682-A	MI-041 (MM) BOARD, COMPLETE (TRV78/TRV78E/TRV98E)	
15	A-7074-683-A	MI-040 (0) BOARD, COMPLETE (TR728E)	
15	A-7074-700-A	MI-041 (ML) BOARD, COMPLETE (TRV58/TRV58E)	
15	A-7074-707-A	MI-041 (MML) BOARD, COMPLETE (TRV68/TRV88)	
15	A-7074-719-A	MI-041 (M) BOARD, COMPLETE (TRV49/TRV49E/TRV59E)	
16	3-987-717-01	SCREW, TRIPOD	
17	1-467-574-21	REMOTE COMMANDER (RMT-708) (TR728E/TRV49/TRV49E/TRV59E/TRV78/TRV78E/TRV98/TRV98E)	
18	3-958-131-01	LID,BATTERY CASE (FOR RMT-708)	
19	3-065-464-11	WINDOW (12), LCD (TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)	
MIC901	1-542-312-11	MICROPHONE	

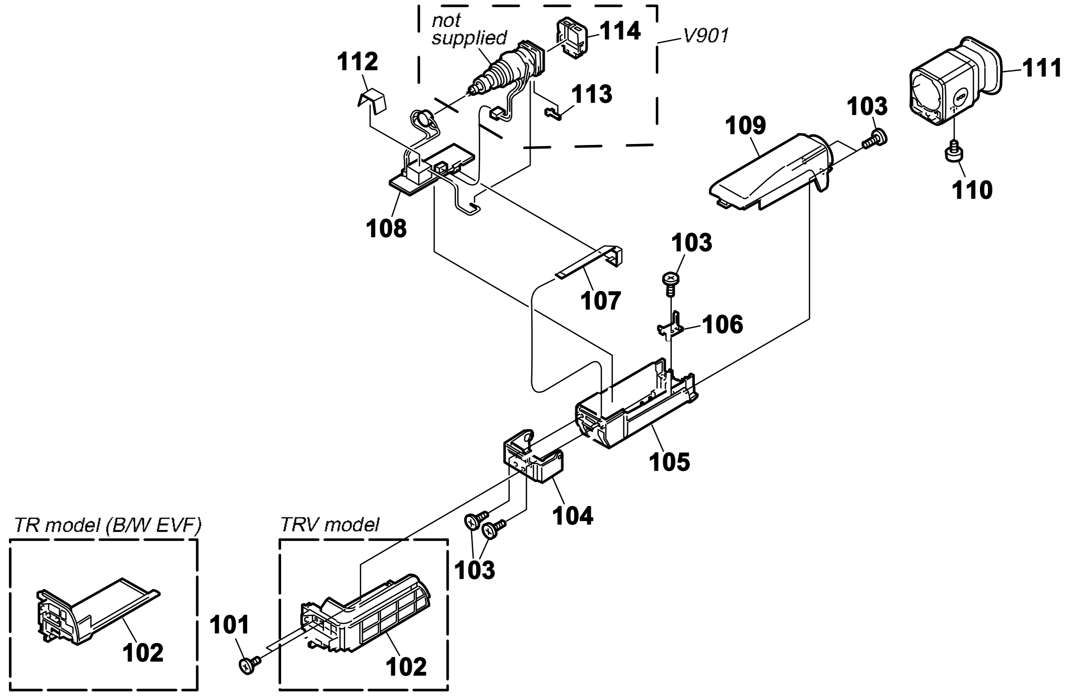
6-1-2. CABINET (L) SECTION


58
57
59
53
68
TR model
61
58
60
K
TRV model
60
58
62
I
63
not supplied
58
G
58
64
BT901
J
Mechanism deck
(See page 6-8 to 6-10)
A
C
B
D
E
56
53
H
69
I
53
J
73
F
K
A
C
B
D
E
VC-251
72
54
66
F
H
53
53
55
53
67
51
65
70
52
53
Lens section
(See page 6-7)
B/W EVF model
B/W EVF section
(See page 6-3)
G
71
66
Color EVF model
Color EVF section
(See page 6-4)
G
71
66

TR model :CCD-TR618/TR618E/TR718E/TR728E/TR818
TRV model :CCD-TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E
B/W EVF model :CCD-TR618/TR618E/TR718E/TR728E/
TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E
Color EVF model :CCD-TR818

Ref. No.	Part No.	Description	Remarks
51	1-680-203-11	FP-263 FLEXIBLE BOARD	
* 52	3-065-428-01	FRAME B (10), MD	
53	3-968-729-51	SCREW (M2), LOCK ACE, P2	
54	1-680-198-11	FP-257 FLEXIBLE BOARD	
* 55	3-065-429-01	FRAME (10), LENS	
* 56	3-065-427-01	FRAME A (10), MD	
57	X-3951-228-1	LID(10) ASSY, CASSETTE	
58	3-067-347-01	MI SCREW M2 (H)	
59	1-476-424-11	SWITCH BLOCK, CONTROL (FK-1000)	(TR618/TR618E/TR718E/TR728E/TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98E)
59	1-476-424-21	SWITCH BLOCK, CONTROL (FK-1000)(TR818)	
59	1-476-424-51	SWITCH BLOCK, CONTROL (FK-1000)(TRV98)	
60	3-065-421-01	SHEET METAL (LOWER)(12), STRAP	(TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
60	3-065-422-01	SHEET METAL (LOWER)(10), STRAP	(TR618/TR618E/TR718E/TR728E/TR818)
61	1-680-202-11	FP-262 FLEXIBLE BOARD	(TR618/TR618E/TR718E/TR728E/TR818)
62	1-476-423-11	SWITCH BLOCK, CONTROL (SS-1000)	
63	X-3951-196-1	PANEL (12) ASSY, BATTERY	(TRV49/TRV49E/TRV58:US,CND,E,AR/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98:US,CND,E,HK,KR,JE/TRV98E)
63	X-3951-198-1	PANEL (10) ASSY, BATTERY	(TR618/TR618E/TR718E/TR728E/TR818:US,CND,E,AR)
63	X-3951-470-1	PANEL (B)(10) ASSY, BATTERY (TR818:BR)	
63	X-3951-471-1	PANEL (B)(12) ASSY, BATTERY	(TRV58:BR/TRV98:BR)
64	3-987-656-01	LID,JACK	
65	A-7096-402-A	VC-251 (N-B) BOARD, COMPLETE (SERVICE)	(TR618)
65	A-7096-403-A	VC-251 (N-C) BOARD, COMPLETE (SERVICE)	(TR818)
65	A-7096-404-A	VC-251 (P-B) BOARD, COMPLETE (SERVICE)	(TR618E/TR718E/TR728E)
65	A-7096-405-A	VC-251 (N-VMMB) BOARD, COMPLETE (SERVICE)	(TRV68/TRV78/TRV88/TRV98)
65	A-7096-406-A	VC-251 (P-VMMB) BOARD, COMPLETE (SERVICE)	(TRV78E/TRV98E)
65	A-7096-409-A	VC-251 (N-VB) BOARD, COMPLETE (SERVICE)	(TRV49/TRV58)
65	A-7096-456-A	VC-251 (P-VB) BOARD, COMPLETE (SERVICE)	(TRV49E/TRV58E/TRV59E)
66	3-948-339-61	TAPPING	
67	1-680-200-11	FP-259 FLEXIBLE BOARD	
68	X-3950-697-1	LID ASSY, LS	
* 69	3-065-654-01	SHIELD (10), DD	
* 70	3-065-432-01	CASE (10), RP SHIELD	
71	3-941-343-21	TAPE(A)	
72	3-067-254-01	SHEET (10), ABSORBING	
* 73	3-062-053-01	SPACER, PC	
BT901	1-694-384-11	TERMINAL BOARD, BATTERY	

6-1-3. B/W EVF SECTION (TR618/TR618E/TR718E/TR728E/TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/ TRV78/TRV78E/TRV88/TRV98/TRV98E)

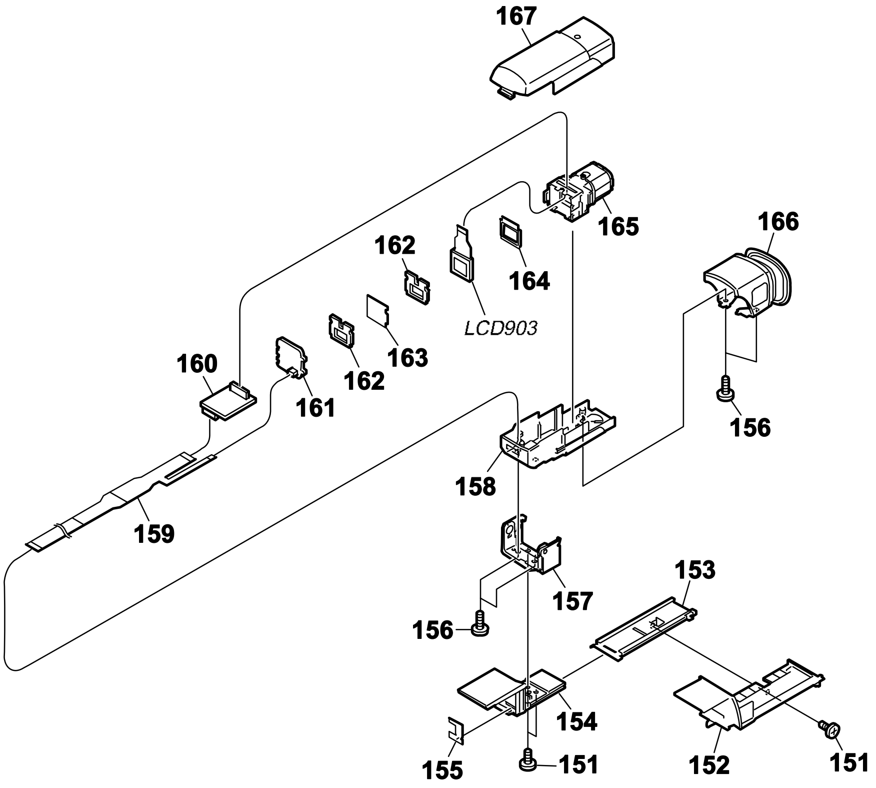


TR model (B/W EVF) :CCD-TR618/TR618E/TR718E/TR728E
TRV model :CCD-TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E

Ref. No.	Part No.	Description	Remarks
101	3-061-794-01	SCREW, LOOSE STOPPER	
102	3-065-481-01	BASE B (12), VF (TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/ TRV78/TRV78E/TRV88/TRV98/TRV98E)	
102	3-065-482-01	BASE B (10), VF (TR618/TR618E/TR718E/TR728E)	
103	3-948-339-81	TAPPING	
104	X-3950-230-1	HINGE ASSY, VF	
105	3-058-644-11	CABINET (LOWER) (B) (100), EVF (TR618/TR618E/TR718E/TR728E)	
105	3-065-480-01	CABINET LOWER B (12), EVF (TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/ TRV78/TRV78E/TRV88/TRV98/TRV98E)	
106	3-053-681-01	TALLY, EVF	
107	1-792-454-11	CABLE, FLEXIBLE FLAT (FFC-289)	
108	A-7073-838-A	VF-129 (N) BOARD, COMPLETE (TR618/TRV49/TRV58/TRV68/TRV78/TRV88/TRV98)	
108	A-7073-855-A	VF-129 (P) BOARD, COMPLETE (TR618E/TR718E/TR728E/TRV49E/ TRV58E/TRV59E/TRV78E/TRV98E)	
109	X-3951-202-1	CABINET UPPER B (12) ASSY, EVF (TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/ TRV78/TRV78E/TRV88/TRV98/TRV98E)	
109	X-3951-203-1	CABINET UPPER B (10) ASSY, EVF (TR618/TR618E/TR718E/TR728E)	
110	3-975-898-01	SCREW (T), F LOCK	
111	X-3949-329-1	FINDER (S) ASSY	
112	3-941-343-21	TAPE (A)	
113	3-709-272-01	COVER, HIGH VOLTAGE	
114	3-709-273-01	MASK, CRT	
⚠V901	1-452-673-61	CRT ASSY (M01KXX90WB)	

Note :	**Note :**
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	**Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.**

6-1-4. COLOR EVF SECTION (TR818)


167
162
165
166
164
LCD903
160
163
162
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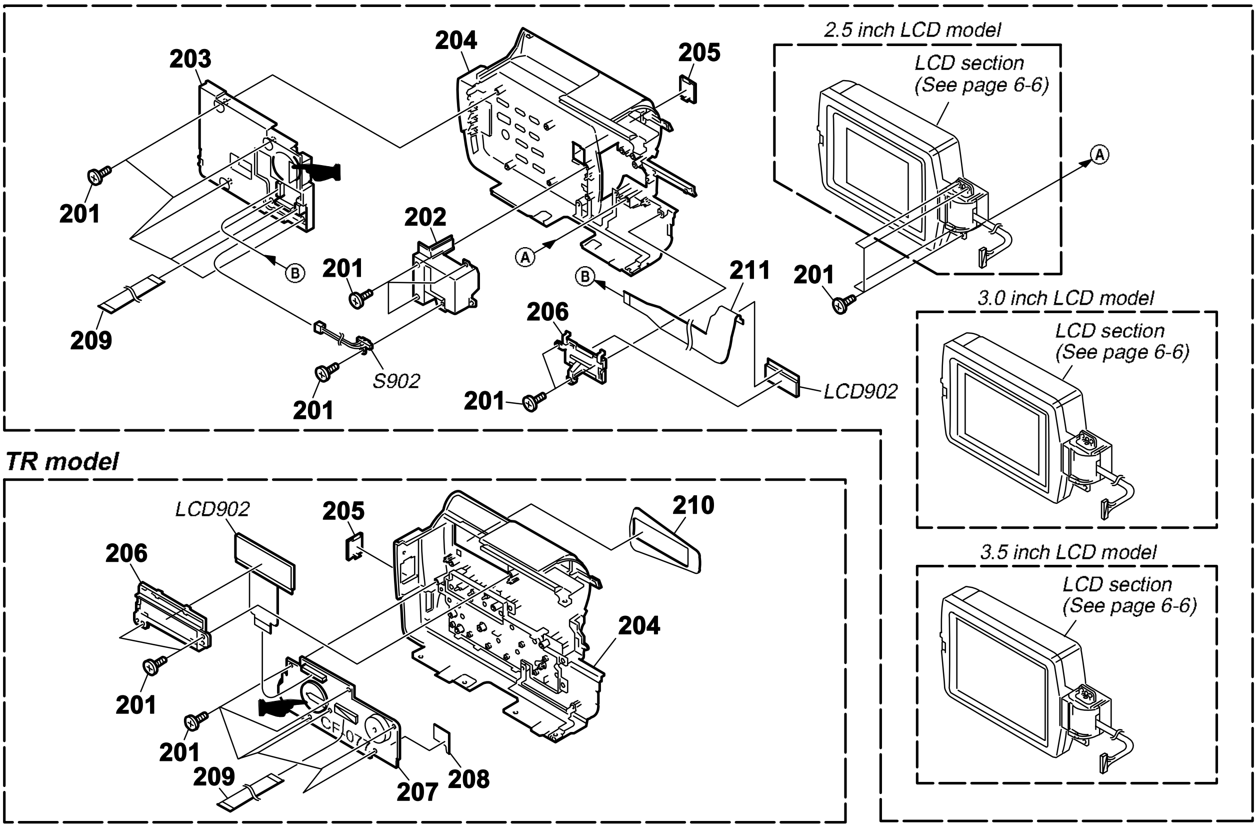
151

Ref. No.	Part No.	Description	Remarks
151	3-067-347-01	MI SCREW M2 (H)	
152	3-065-484-01	BASE C (10), VF	
153	3-065-483-01	PLATE (10), SLIDE FIXED	
154	X-3951-205-1	BASE (10) ASSY, SLIDE	
* 155	3-058-640-01	RETAINER (100), HARNESS	
156	3-948-339-81	TAPPING	
157	X-3950-230-1	HINGE ASSY, VF	
158	X-3951-204-1	CABINET LOWER C (10) ASSY, EVF	
159	1-676-299-11	FP-151 FLEXIBLE BOARD	
160	A-7074-193-A	VF-141 BOARD, COMPLETE	
161	A-7074-192-A	LB-62 BOARD, COMPLETE	
* 162	3-058-234-02	CUSHION (2) (97), LCD	
163	3-058-233-01	ILLUMINATOR (97), BL	
* 164	3-058-232-01	CUSHION (1) (97), LCD	
165	X-3950-101-1	LENS (C) (97) ASSY, VF	
166	X-3950-227-1	CABINET (REAR) (100) ASSY, EVF	
167	3-058-638-11	CABINET (UPPER) (100), EVF	
LCD903	8-753-028-47	LCX032AN-J	

6-1-5. CABINET (R) SECTION

TRV model

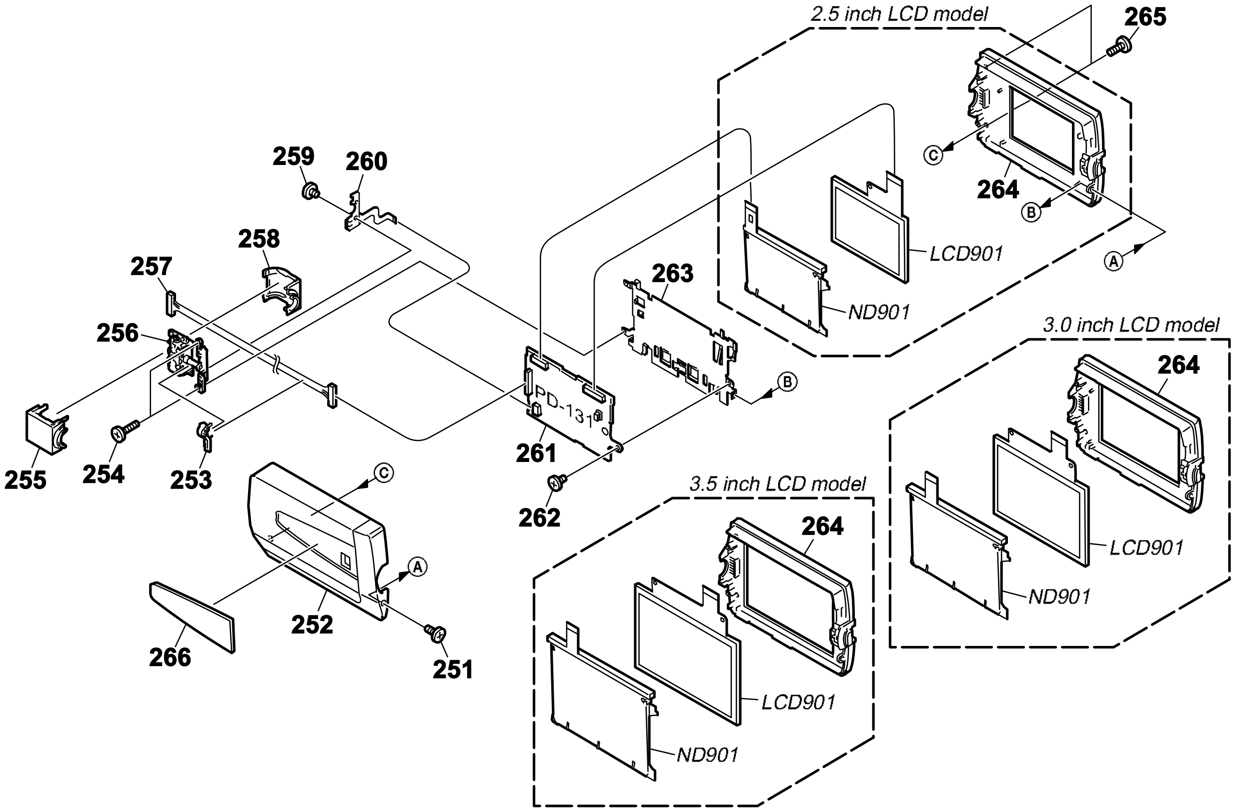

203
204
205
2.5 inch LCD model
LCD section
(See page 6-6)
A
201
202
201
A
B
B
211
201
209
206
S902
201
201
LCD902
3.0 inch LCD model
LCD section
(See page 6-6)
TR model
LCD902
205
210
206
204
201
201
209
207
208
3.5 inch LCD model
LCD section
(See page 6-6)

: **BT001(Lithium battary) CF board on the mount position. (See page 4-36/TR model)**
[In the TRV model, the printed wiring board of the control switch block (CF-1000) on which lithium battery is mounted, is not shown.]

TR model :CCD-TR618/TR618E/TR718E/TR728E/TR818
TRV model :CCD-TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E
2.5 inch LCD model :CCD-TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E
3.0 inch LCD model :CCD-TRV88
3.5 inch LCD model :CCD-TRV98/TRV98E

Ref. No.	Part No.	Description	Remarks
201	3-948-339-61	TAPPING	
202	3-065-436-01	BLIND (12), HINGE (TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/ TRV78/TRV78E/TRV88/TRV98/TRV98E)	
203	1-476-425-11	SWITCH BLOCK, CONTROL (CF-1000) (TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/ TRV78/TRV78E/TRV88/TRV98/TRV98E)	
204	X-3951-224-1	CABINET R (12) ASSY (TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/ TRV78/TRV78E/TRV88/TRV98/TRV98E)	
204	X-3951-226-1	CABINET R (10) ASSY (TR618/TR618E/TR718E/TR728E/TR818)	
205	3-059-539-11	LID(103P), CPC	
206	3-065-451-01	HOLDER (12), LCD (TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/ TRV78/TRV78E/TRV88/TRV98/TRV98E)	
206	3-065-452-01	HOLDER (10), LCD (TR618/TR618E/TR718E/TR728E/TR818)	
207	A-7074-663-A	CF-077 BOARD, COMPLETE (TR618/TR618E/TR718E/TR728E/TR818)	
* 208	3-065-453-01	SHEET (10), MUFFLE (TR618/TR618E/TR718E/TR728E/TR818)	
209	1-757-397-21	CABLE, FLEXIBLE FLAT (FFC-295)	
210	3-065-434-01	WINDOW (10), LCD (TR818)	
210	3-065-434-11	WINDOW (10), LCD (TR728E)	
210	3-065-434-21	WINDOW (10), LCD (TR618)	
210	3-065-434-31	WINDOW (10), LCD (TR618E)	
210	3-065-434-41	WINDOW (10), LCD (TR718E)	
211	1-680-201-11	FP-260 FLEXIBLE BOARD (TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/ TRV78/TRV78E/TRV88/TRV98/TRV98E)	
LCD902	1-803-844-91	DISPLAY PANEL, LIQUID CRYSTAL (TR618/TR618E/TR718E/TR728E/TR818)	
LCD902	1-804-255-11	DISPLAY PANEL, LIQUID CRYSTAL (TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/ TRV78/TRV78E/TRV88/TRV98/TRV98E)	
S902	1-771-848-11	SWITCH, PUSH (TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/ TRV78/TRV78E/TRV88/TRV98/TRV98E)	

6-1-6. LCD SECTION (TRV MODEL)
(TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)

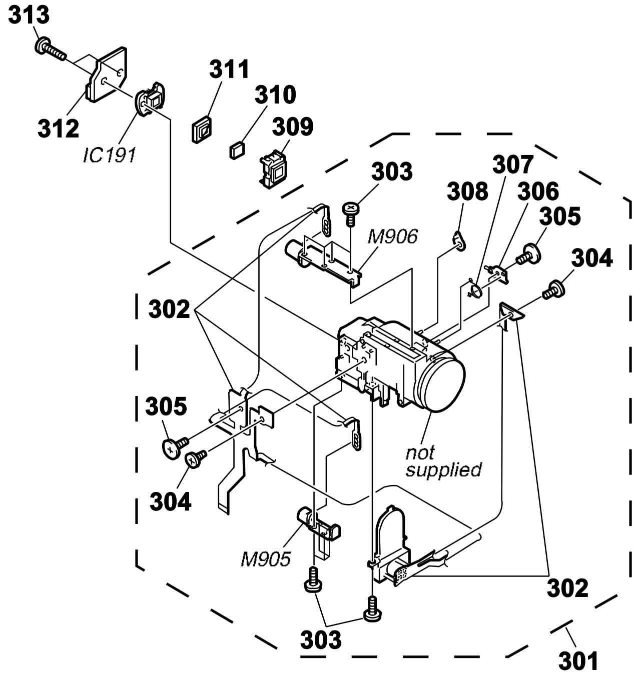


2.5 inch LCD model :CCD-TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E
3.0 inch LCD model :CCD-TRV88
3.5 inch LCD model :CCD-TRV98/TRV98E

Ref. No.	Part No.	Description	Remarks
251	3-067-347-01	MI SCREW M2 (H)	
252	3-065-474-11	CABINET C (12), P	
* 253	3-058-672-01	CLAMP, HARNESS	
254	3-948-339-31	SCREW, TAPPING	
255	3-065-477-11	COVER C (12), HINGE	
256	X-3951-206-1	HINGE (12) ASSY	
257	1-960-975-11	HARNESS (PD-110)	
258	3-065-478-01	COVER M (12), HINGE	
259	4-974-725-01	SCREW (M1.7X2.5), P	
260	1-418-802-11	SWITCH BLOCK, CONTROL (PR-10000)	
261	A-7074-667-A	PD-131 (S-3.5) BOARD, COMPLETE	(TRV98/TRV98E)
261	A-7074-680-A	PD-131 (S-2.5) BOARD, COMPLETE	(TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E)
261	A-7074-701-A	PD-131 (S-3.0) BOARD, COMPLETE (TRV88)	
262	3-968-729-51	SCREW (M2), LOCK ACE, P2	
263	3-065-475-01	FRAME (12), PANEL	(TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E)
* 263	3-065-475-11	FRAME (12), PANEL (TRV88/TRV98/TRV98E)	
264	X-3951-199-1	CABINET M (12) ASSY, P	(TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E)
264	X-3951-200-1	CABINET M (12) ASSY, P (TRV98/TRV98E)	
264	X-3951-201-1	CABINET M (12) ASSY, P (TRV88)	
265	3-948-339-81	TAPPING	
266	3-065-435-01	PLATE (12), PANEL ORNAMENTAL (TRV98)	
266	3-065-435-21	PLATE (12), PANEL ORNAMENTAL (TRV88)	
266	3-065-435-31	PLATE (12), PANEL ORNAMENTAL (TRV78)	
266	3-065-435-41	PLATE (12), PANEL ORNAMENTAL (TRV59E)	
266	3-065-435-51	PLATE (12), PANEL ORNAMENTAL (TRV68)	
266	3-065-435-61	PLATE (12), PANEL ORNAMENTAL (TRV98E)	
266	3-065-435-81	PLATE (12), PANEL ORNAMENTAL (TRV78E)	
266	3-065-529-21	PLATE (12), PANEL ORNAMENTAL (TRV58)	
266	3-065-529-31	PLATE (12), PANEL ORNAMENTAL (TRV49)	
266	3-065-529-41	PLATE (12), PANEL ORNAMENTAL (TRV58E)	
266	3-065-529-51	PLATE (12), PANEL ORNAMENT (TRV49E)	
LCD901	1-803-852-31	INDICATOR MODULE LIQUID CRYSTAL	(TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E)
LCD901	1-803-854-21	INDICATOR MODULE LIQUID CRYSTAL(TRV88)	
LCD901	1-803-855-21	INDICATOR MODULE LIQUID CRYSTAL	(TRV98/TRV98E)
⚠ND901	1-517-752-41	TUBE, FLUORESCENT,COLD CATHODE	(TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E)
⚠ND901	1-517-855-31	TUBE, FLUORESCENT,COLD CATHODE	(TRV98/TRV98E)
⚠ND901	1-517-856-31	TUBE, FLUORESCENT,COLD CATHODE (TRV88)	

Note :	Note :
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

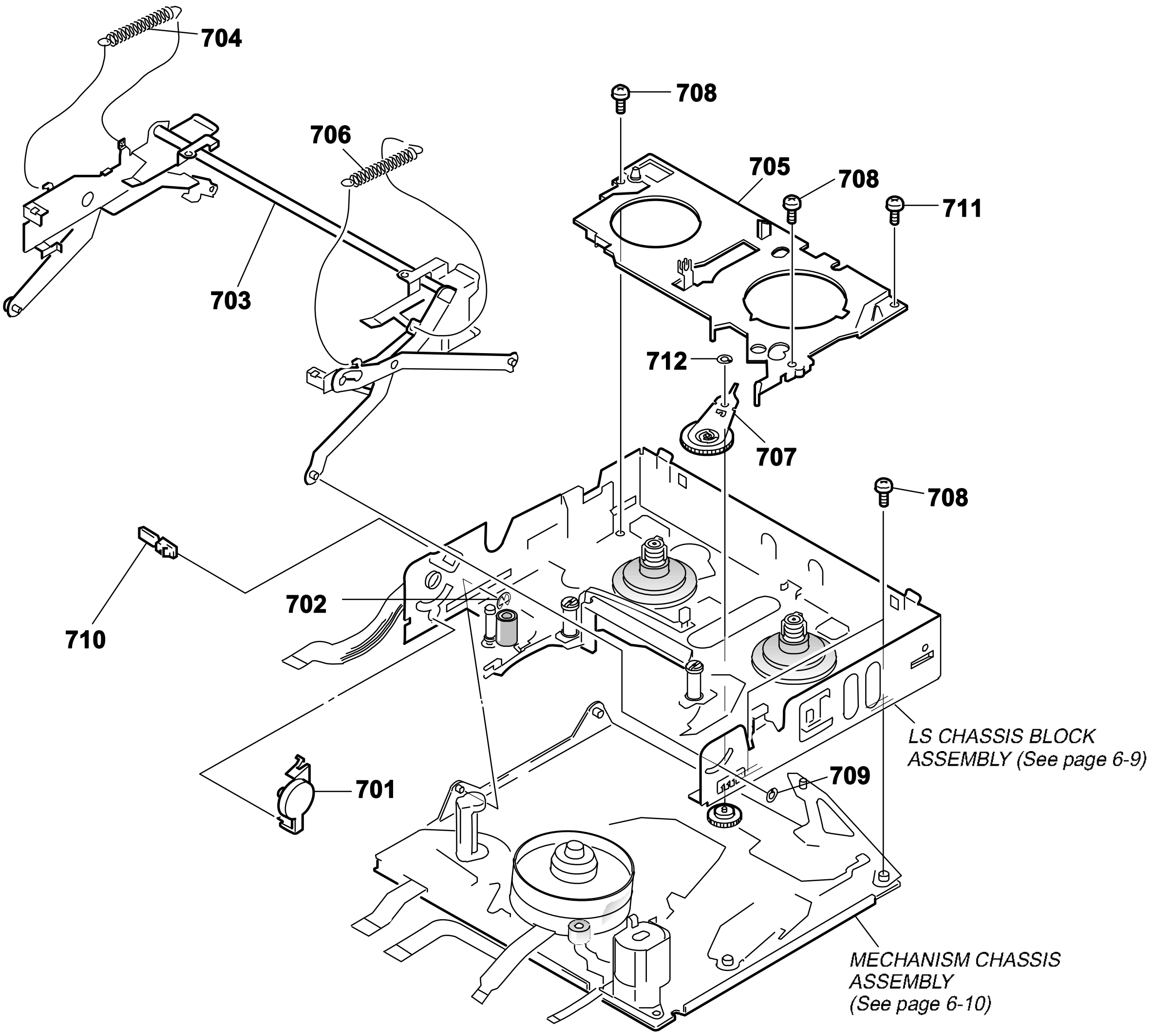
6-1-7. LENS SECTION



Be sure to read "Precautions upon replacing CCD imager" on page 4-8 when changing the CCD imager.

Ref. No.	Part No.	Description	Remarks
301	8-848-729-01	DEVICE, LENS LSV-630A	
302	X-3949-355-2	FLEXIBLE ASSY (630), IRIS	
303	3-713-791-41	SCREW (M1.7X5), TAPPING, P2	
304	3-713-791-51	SCREW (M1.7X3.5), TAPPING, P2	
305	3-056-022-01	TAPPING (B1.7X3.5), HEAD	
306	3-053-827-01	LEVER, IR	
307	3-053-800-01	SPRING, RETURN	
308	3-053-799-01	GEA, IR	
309	3-978-981-11	ADAPTOR (FK), CCD FITTING	
310	1-758-084-21	FILTER BLOCK, OPTICAL	(TR618/TR618E/TR718E/TR728E/TRV49/TRV49E/TRV58/TRV58E/TRV59E)
310	1-758-133-21	FILTER BLOCK, OPTICAL	(TR818/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
311	3-953-817-01	RUBBER (F), SEAL	(TR818/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
311	3-968-054-11	RUBBER (FM), SHIELD	(TR618/TR618E/TR718E/TR728E/TRV49/TRV49E/TRV58/TRV58E/TRV59E)
312	A-7074-658-A	CD-286 BOARD, COMPLETE	(TR618/TR618E/TR718E/TR728E)
312	A-7074-662-A	CD-286 (MM) BOARD, COMPLETE (TR818)	
312	A-7074-666-A	CD-281 (MM) BOARD, COMPLETE	(TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
312	A-7074-698-A	CD-281 BOARD, COMPLETE	(TRV49/TRV49E/TRV58/TRV58E/TRV59E)
313	3-318-203-11	SCREW (B1.7X6), TAPPING	
IC191	A-7031-040-A	CCD BLOCK ASSY (TR618/TRV49/TRV58)	
IC191	A-7031-043-A	CCD BLOCK ASSY	(TR618E/TR718E/TR728E/TRV49E/TRV58E/TRV59E)
IC191	A-7031-049-A	CCD BLOCK ASSY (TRV78E/TRV98E)	
IC191	A-7031-207-A	CCD BLOCK ASSY	(TR818/TRV68/TRV78/TRV88/TRV98)
M905	1-763-262-11	MOTOR, STEPPING F630 (FOCUS)	
M906	1-763-046-21	MOTOR, STEPPING Z600 (ZOOM)	

6-1-8. CASSETTE COMPARTMENT ASSEMBLY

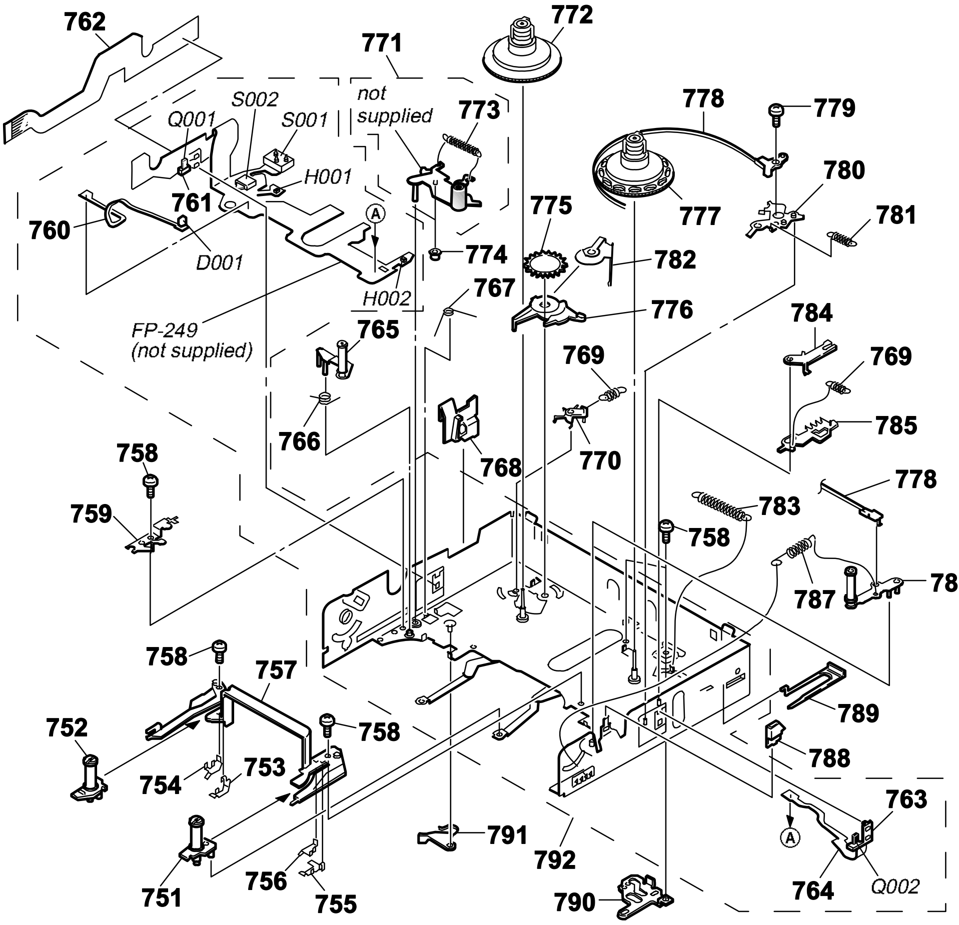


LS CHASSIS BLOCK ASSEMBLY (See page 6-9)

MECHANISM CHASSIS ASSEMBLY (See page 6-10)

Ref. No.	Part No.	Description	Remarks
701	A-7040-421-A	DAMPER ASSY	
702	7-624-102-04	STOP RING 1.5, TYPE -E	
703	X-3949-153-2	CASSETTE COMPARTMENT ASSY	
704	3-965-587-03	SPRING(POWER TENSION),TENSION	
705	3-989-479-01	RETAINER (2), GOOSENECK	
706	3-973-268-01	SPRING(POWER TENSION),TENSION	
707	X-3945-399-1	GEAR ASSY, GOOSENECK	
708	3-947-503-01	SCREW (M1.4)	
709	3-979-686-01	WASHER, STOPPER	
710	3-971-076-01	FASTENER, D	
711	3-976-055-01	SCREW (M1.4X1)	
712	3-331-007-21	WASHER	

6-1-9. LS CHASSIS BLOCK ASSEMBLY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D001
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FP-249 (not supplied)
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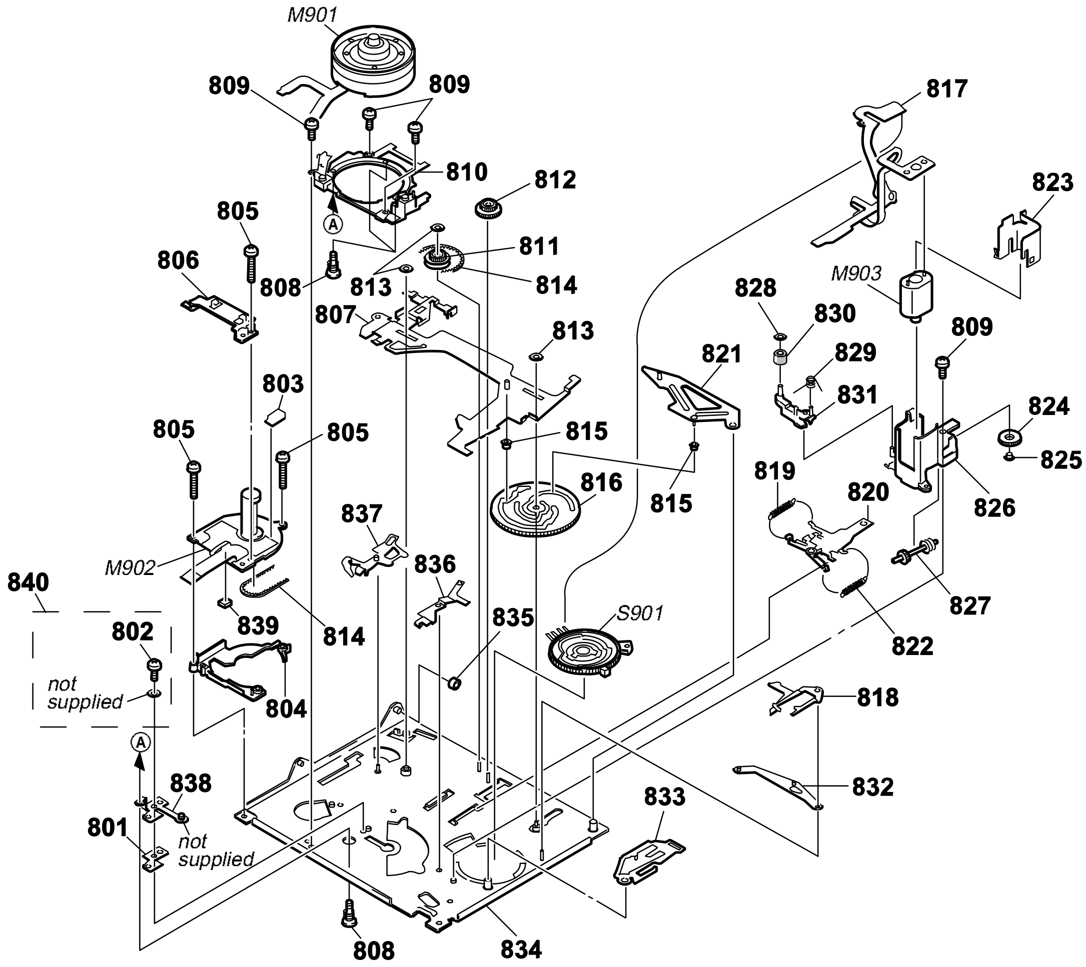
Q002

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
751	A-7040-419-A	BASE (S) BLOCK ASSY, GUIDE		776	3-965-565-01	CLAW, T SOFT	
752	A-7040-418-B	BASE (T) BLOCK ASSY, GUIDE		777	X-3945-397-4	DECK ASSY, REEL, S	
753	3-965-559-01	STOPPER (T)		778	X-3945-396-1	BAND ASSY, TENSION REGULATOR	
754	3-965-557-01	STOPPER (T), GB		779	3-945-756-01	SCREW (M1.4X3)	
755	3-965-558-01	STOPPER (S)		780	3-965-583-01	ARM, RVS	
756	3-965-556-01	STOPPER (S), GB		781	3-965-580-01	SPRING (ARM, RVS), TENSION	
757	3-965-553-01	RAIL, GUIDE		782	3-966-384-01	SPRING, T SOFT	
758	3-947-503-01	SCREW (M1.4)		783	3-965-578-01	SPRING, TENSION COIL	
759	3-965-573-01	RETAINER, TG4		784	3-965-560-01	RATCHET, S	
760	1-658-213-11	FP-355 FLEXIBLE BOARD		785	3-965-561-01	PLATE, RELEASE, S RATCHET	
761	3-965-552-01	HOLDER, SENSOR (T)		786	X-3945-395-1	ARM ASSY, TG1	
762	1-657-786-13	FP-221 FLEXIBLE PRINT BOARD		787	3-965-576-01	SPRING (TG1), TENSION	
763	3-965-551-01	HOLDER, SENSOR (S)		788	3-965-567-01	LID OPEN	
764	1-658-214-11	FP-356 FLEXIBLE BOARD		789	3-965-566-01	COVER, LS GUIDE	
765	A-7040-417-A	ARM BLOCK ASSY, TG4		* 790	3-965-577-01	PLATE, CAM, LS	
766	3-965-574-01	SPRING (RETURN, TG4), TORSION		791	3-965-569-01	ARM, EJ	
767	3-965-575-01	SPRING (PINCH), TORSION		792	A-7018-245-B	CHASSIS (S1) ASSY, LS	
768	3-965-568-11	GUIDE, LOCK		D001	8-719-988-42	DIODE GL453 (TAPE LED)	
769	3-965-562-01	SPRING (RATCHET), TENSION		H001	8-719-033-37	ELEMENT, HALL HW-105C (T REEL SENSOR)	
770	3-965-581-03	RATCHET, T		H002	8-719-033-37	ELEMENT, HALL HW-105C (S REEL SENSOR)	
771	X-3949-380-1	ARM ASSY (E), PINCH		Q001	8-729-907-25	PHOTO TRANSISTOR PT4850F (TAPE TOP)	
772	X-3945-398-6	DECK ASSY, REEL, T		Q002	8-729-907-25	PHOTO TRANSISTOR PT4850F (TAPE END)	
773	3-965-648-01	SPRING (PINCH), TENSION		S001	1-692-614-11	SWITCH, PUSH (3KEY)	(Hi8 MP, ME/MP, REC PROOF)
774	3-965-579-01	ROLLER, PINCH PRESS					
775	3-965-563-01	GEAR, T SOFT		S002	1-572-688-11	SWITCH, PUSH (1KEY) (C.C.LOCK)	

6-1-10. MECHANISM CHASSIS ASSEMBLY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not supplied
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834

Ref. No.	Part No.	Description	Remarks
801	3-975-900-03	SPACER, GROUND	
802	3-965-550-02	SCREW (M1.7X1.6)	
803	1-657-785-11	FP-248 FLEXIBLE BOARD	
804	3-054-404-01	SPACER, CAPSTAN	
805	3-965-549-01	SCREW (M1.4 X 6.5)	
806	3-966-349-01	HOLDER, FLEXIBLE	
807	3-971-644-02	SLIDER (2), M	
808	X-3947-895-1	SCREW ASSY, DRUM ATTACHED	
809	3-947-503-01	SCREW (M1.4)	
810	A-7096-321-A	DRUM BASE BLOCK ASSY (BA)	
811	3-965-527-01	GEAR, CHANGE	
812	3-965-544-01	GEAR, RELAY	
813	3-331-007-21	WASHER	
814	3-965-546-01	BELT, TIMING	
815	3-965-533-01	ROLLER, LS	
816	3-965-528-01	GEAR, CAM	
817	1-657-784-11	FP-220 FLEXIBLE BOARD	
818	3-965-529-01	PLATE, REGULATOR, TENSION	
819	3-965-536-01	SPRING (LIMITTER ARM T), COIL	
820	X-3945-388-1	SLIDER ASSY, GL	
821	3-965-532-21	ARM, LS	
822	3-965-535-01	SPRING (LIMITTER ARM S), COIL	
823	3-965-542-01	SHIELD, MOTOR	
824	3-965-539-01	GEAR (A)	
825	3-965-538-01	SLEEVE, MOTOR HOLDER	
826	3-965-540-01	HOLDER, MOTOR	
827	3-965-541-01	SHAFT, WORM	
828	3-321-393-01	WASHER, STOPPER	
829	3-965-724-01	SPRING (RETURN, HC), TORSION	
830	A-7040-423-A	ROLLER BLOCK ASSY, HC	
831	X-3945-407-1	ARM ASSY, HC ROLLER	
832	3-965-531-01	ARM, GL	
833	3-965-530-01	PLATE (2), REGULATOR, TENSION	
834	X-3949-589-3	CHASSIS ASSY, MECHANICAL	
835	3-965-526-02	ROLLER, LS GUIDE	
836	3-965-547-01	ARM, HC DRIVING	
837	3-965-534-01	PLATE, PRESS, PINCH	
838	3-974-320-02	GROUND (IM), SHAFT	
839	3-987-953-01	SPACER, RUBBER	
840	X-3947-398-1	SCREW ASSY, M1.7 PW	
S901	1-762-436-15	SWITCH, ROTARY (ENCODER)	
M901	A-7048-953-A	DRUM BLOCK ASSY (DGH-0F0B-R) (NTSC)	
M901	A-7048-955-A	DRUM BLOCK ASSY (DGH-0F1B-R) (PAL)	
M902	8-835-531-32	MOTOR, DC SCE-0601A/C-NP (CAPSTAN)	
M903	X-3945-401-1	MOTOR ASSY, DC (LOADING)	

6-2. ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- CAPACITORS:
  uF: μF
- COILS
  uH: μH
- RESISTORS
  All resistors are in ohms.
  METAL: metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F: nonflammable
- SEMICONDUCTORS
  In each case, u: μ, for example:
  uA...: μA... , uPA... , μPA... ,
  uPB... , μPB... , uPC... , μPC... ,
  uPD..., μPD...
- Abbreviation
  CND : Canadian model
  HK : Hong Kong model
  KR : Korea model
  JE : Tourist model

When indicating parts by reference number, please include the board name.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

AUS : Australian model
CN : Chinese model
BR : Brazilian model
AR : Argentina model

Ref. No.	Part No.	Description	Remarks
	A-7074-658-A	CD-286 BOARD, COMPLETE	
		(TR618/TR618E/TR718E/TR728E)	
		**************************************	
	A-7074-662-A	CD-286 BOARD, COMPLETE (TR818)	
		******************************	
	A-7074-666-A	CD-281 BOARD, COMPLETE	
		(TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)	
		**************************************	
	A-7074-698-A	CD-281 BOARD, COMPLETE	
		(TRV49/TRV49E/TRV58/TRV58E/TRV59E)	
		**************************************	
		(Ref.No.;1000 Series)	
		(IC191 is not included in this mounted board)	
		< CAPACITOR >	
C191	1-126-395-11	ELECT 22uF 20% 16V	
C195	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C196	1-128-994-21	ELECT CHIP 47uF 20% 10V	
		< CONNECTOR >	
CN191	1-766-344-21	CONNECTOR, FFC/FPC 14P	
		< IC >	
IC191	A-7031-040-A	CCD BLOCK ASSY (TR618/TRV49/TRV58)	
IC191	A-7031-043-A	CCD BLOCK ASSY	
		(TR618E/TR718E/TR728E/TRV49E/TRV58E/TRV59E)	
IC191	A-7031-049-A	CCD BLOCK ASSY (TRV78E/TRV98E)	
IC191	A-7031-207-A	CCD BLOCK ASSY	
		(TR818/TRV68/TRV78/TRV88/TRV98)	
		< COIL >	
L191	1-469-528-91	INDUCTOR 100uH	
		< TRANSISTOR >	
Q191	8-729-117-73	TRANSISTOR 2SC4178-F13F14-T1	
		< RESISTOR >	
R191	1-216-797-11	METAL CHIP 10 5% 1/16W	
R192	1-216-864-91	SHORT 0	
R193	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R195	1-216-864-91	SHORT 0	
R198	1-216-809-11	METAL CHIP 100 5% 1/16W	
		(TR618/TR618E/TR718E/TR728E/TRV49/	
		TRV49E/TRV58/TRV58E/TRV59E)	

Be sure to read "Precautions upon replacing CCD imager" on page 4-8 when changing the CCD imager.

Ref. No.	Part No.	Description	Remarks
R198	1-216-864-91	SHORT 0	
		(TR818/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)	

Ref. No.	Part No.	Description	Remarks
	A-7074-663-A	CF-077 BOARD, COMPLETE	
		(TR618/TR618E/TR718E/TR728E/TR818)	
		**************************************	
		(Ref.No.;1000 Series)	
		< BATTERY >	
BT001	1-756-146-11	BATTERY, LITHIUM (SECONDARY)	
		< BUZZER >	
BZ001	1-529-107-11	BUZZER, PIEZOELECTRIC	
		< CAPACITOR >	
C001	1-125-777-11	CERAMIC CHIP 0.1uF 10% 10V	
		< CONNECTOR >	
CN001	1-815-031-11	CONNECTOR, FFC/FPC (ZIF) 24P	
CN002	1-794-050-21	CONNECTOR, FFC/FPC (ZIF) 26P	
		< IC >	
IC001	8-759-573-02	IC BU9735K-E2	
		< RESISTOR >	
R005	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	
R006	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	
R010	1-216-855-11	METAL CHIP 680K 5% 1/16W	
R011	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R013	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R014	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	
R015	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R016	1-216-834-11	METAL CHIP 12K 5% 1/16W	
R017	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R018	1-216-838-11	METAL CHIP 27K 5% 1/16W	
R023	1-216-835-11	METAL CHIP 15K 5% 1/16W	
		< SWITCH >	
S001	1-771-138-82	SWITCH, KEY BOARD (RESET)	
S002	1-771-138-82	SWITCH, KEY BOARD (MENU)	
S003	1-771-138-82	SWITCH, KEY BOARD (TIME)	
S004	1-771-138-82	SWITCH, KEY BOARD (EXPOSURE)	
S005	1-771-138-82	SWITCH, KEY BOARD (DATE)	

CF-077 **FP-249** **FP-355** **FP-356** **LB-062** **MI-040** **MI-041**

Ref. No.	Part No.	Description	Remarks
S006	1-771-025-41	SWITCH, ROTARY (ENCODER)	(SEL/PUSH EXEC.)
S007	1-771-138-82	SWITCH, KEY BOARD (TITLE)	
S008	1-771-138-82	SWITCH, KEY BOARD (COUNTER RESET)	
S009	1-771-138-82	SWITCH, KEY BOARD (BACK LIGHT)	
S010	1-771-138-82	SWITCH, KEY BOARD (FOCUS)	
S011	1-771-138-82	SWITCH, KEY BOARD (FADER)	
		FP-249 BOARD, COMPLETE (Not supplied) ************************************	(Ref.No.;20000 Series)
	3-965-552-01	HOLDER (T), SENSOR	
		< HOLE ELEMENT >	
H001	8-719-033-37	ELEMENT, HALL HW-105C (T REEL)	
H002	8-719-033-37	ELEMENT, HALL HW-105C (S REEL)	
		< TRANSISTOR >	
Q002	8-729-907-25	PHOTO TRANSISTOR PT4850F (TAPE END)	
		< SWITCH >	
S001	1-692-614-11	SWITCH, PUSH (3 KEY)	(Hi8 MP,ME/MP,REC PROOF)
S002	1-572-688-11	SWITCH, PUSH (1 KEY)(C.C.DOWN)	
	1-658-213-11	FP-355 FLEXIBLE BOARD ********************	(Ref.No.;20000 Series)
		< DIODE >	
D001	8-719-988-42	DIODE GL453 (TAPE LED)	
	1-658-214-11	FP-356 FLEXIBLE BOARD ********************	(Ref.No.;20000 Series)
	3-965-551-01	HOLDER (S), SENSOR	
		< TRANSISTOR >	
Q001	8-729-907-25	PHOTO TRANSISTOR PT4850F (TAPE TOP)	
	A-7074-192-A	LB-062 BOARD, COMPLETE (TR818) *****************************	(Ref.No.;10000 Series)
		< CAPACITOR >	
C4601	1-113-682-11	TANTAL. CHIP 33uF 20% 10V	
C4602	1-127-760-11	CERAMIC CHIP 4.7uF 10% 6.3V	
C4603	1-115-464-91	CERAMIC CHIP 0.0022uF 10% 630V	
C4604	1-107-826-11	CERAMIC CHIP 0.1uF 10% 16V	
		< CONNECTOR >	
CN4601	1-764-516-21	CONNECTOR, FFC/FPC (ZIF) 6P	
		< IC >	
IC4601	8-759-485-79	IC TC7SET08FU(TE85R)	

Ref. No.	Part No.	Description	Remarks
		< COIL >	
L4601	1-412-031-11	INDUCTOR CHIP 47uH	
L4602	1-469-525-91	INDUCTOR 10uH	
		< FLUORESCENT INDICATOR >	
⚠ND4601	1-517-933-11	FLUORESCENT TUBE (0.44)	
		< TRANSISTOR >	
Q4601	8-729-039-24	TRANSISTOR FX216-TL1	
		< RESISTOR >	
R4601	1-216-808-11	METAL CHIP 82 5% 1/16W	
R4604	1-216-853-11	METAL CHIP 470K 5% 1/16W	
		< TRANSFORMER >	
⚠T4601	1-435-225-21	TRANSFORMER, INVERTER	
	A-7074-659-A	MI-040 BOARD, COMPLETE ***************************************	(TR618/TR618E/TR718E)
	A-7074-661-A	MI-040 BOARD, COMPLETE (TR818) *****************************	
	A-7074-665-A	MI-041 BOARD, COMPLETE (TRV98) *****************************	
	A-7074-682-A	MI-041 BOARD, COMPLETE ***************************************	(TRV78/TRV78E/TRV98E)
	A-7074-683-A	MI-040 BOARD, COMPLETE (TR728E) ******************************	
	A-7074-700-A	MI-041 BOARD, COMPLETE (TRV58/TRV58E) ************************************	
	A-7074-707-A	MI-041 BOARD, COMPLETE (TRV68/TRV88) ***********************************	
	A-7074-719-A	MI-041 BOARD, COMPLETE ***************************************	(TRV49/TRV49E/TRV59E) (Ref.No.;10000 Series)
		< CAPACITOR >	
C758	1-124-778-00	ELECT CHIP 22uF 20% 6.3V	(TR818/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
C759	1-125-777-11	CERAMIC CHIP 0.1uF 10% 10V	(TR818/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
C762	1-124-778-00	ELECT CHIP 22uF 20% 6.3V	(TR818/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
C763	1-125-777-11	CERAMIC CHIP 0.1uF 10% 10V	(TR818/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
C764	1-164-943-11	CERAMIC CHIP 0.01uF 10% 16V	
C768	1-164-343-11	CERAMIC CHIP 0.056uF 10% 25V	(TR818/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
C772	1-164-343-11	CERAMIC CHIP 0.056uF 10% 25V	(TR818/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
C774	1-164-343-11	CERAMIC CHIP 0.056uF 10% 25V	(TR818/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
C775	1-110-666-11	ELECT CHIP 22uF 20% 6.3V	(TR818/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
C776	1-107-826-11	CERAMIC CHIP 0.1uF 10% 16V	

Note :	**Note :**
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description			Remarks
C777	1-164-343-11	CERAMIC CHIP	0.056uF	10%	25V (TR818/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
C781	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C782	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C784	1-110-666-11	ELECT CHIP	22uF	20%	6.3V (TR818/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
C785	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C788	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C789	1-110-501-11	CERAMIC CHIP	0.33uF	10%	16V (TR818/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
C791	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V (TR818/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
C794	1-110-410-11	ELECT CHIP	10uF	20%	6.3V (TR818/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
C799	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C800	1-110-446-11	ELECT CHIP	10uF	20%	6.3V
C808	1-110-446-11	ELECT CHIP	10uF	20%	6.3V
C809	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C3901	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V (TRV98)
C3904	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V (TRV98)
C3905	1-117-863-11	CERAMIC CHIP	0.47uF	10%	6.3V (TRV98)
C3906	1-117-863-11	CERAMIC CHIP	0.47uF	10%	6.3V (TRV98)
C3907	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V (TRV98)
C3908	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V (TRV98)
C3909	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V (TRV98)
C3910	1-135-181-11	TANTALUM CHIP	4.7uF	20%	10V (TRV98)
C3911	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V (TRV98)
C3912	1-110-410-11	ELECT CHIP	10uF	20%	6.3V (TRV98)
C3913	1-164-668-11	CERAMIC CHIP	510PF	5%	50V (TRV98)
C3914	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V (TRV98)
C3915	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V (TRV98)
C3916	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V (TRV98)
C3917	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V (TRV98)
C3918	1-162-913-11	CERAMIC CHIP	8PF	0.50PF	50V (TRV98)
C3919	1-117-863-11	CERAMIC CHIP	0.47uF	10%	6.3V (TRV98)
C3920	1-117-863-11	CERAMIC CHIP	0.47uF	10%	6.3V (TRV98)
C3921	1-162-921-11	CERAMIC CHIP	33PF	5%	50V (TRV98)
C3922	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V (TRV98)
C3923	1-162-922-11	CERAMIC CHIP	39PF	5%	50V (TRV98)
C3924	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V (TRV98)

Ref. No.	Part No.	Description			Remarks
C3925	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V (TRV98)
C3926	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V (TRV98)
C3929	1-104-847-11	TANTAL. CHIP	22uF	20%	4V (TRV98)
C3930	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V (TRV98)
C3931	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V (TRV98)
C3932	1-110-453-11	ELECT CHIP	4.7uF	20%	16V
C3933	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3934	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V (TRV98)

< CONNECTOR >

Ref. No.	Part No.	Description	Remarks
* CN752	1-695-320-21	PIN, CONNECTOR (1.5MM)(SMD) 2P	
CN753	1-779-336-11	CONNECTOR, FFC/FPC 24P	

< DIODE >

Ref. No.	Part No.	Description	Remarks
D752	8-719-073-01	DIODE MA111-(K8).S0	(TR728E/TRV49/TRV49E/TRV59E/ TRV78/TRV78E/TRV98/TRV98E)
D753	8-719-070-91	DIODE TLSU1008(T05,SOY)	
D754	8-719-073-01	DIODE MA111-(K8).S0	
D755	8-719-073-01	DIODE MA111-(K8).S0	
D3901	8-719-067-44	DIODE CL-310IRS-X-TU	(TRV98)
D3902	8-719-083-13	DIODE DCS2815	(TRV98)
D3903	8-719-067-44	DIODE CL-310IRS-X-TU	

< IC >

Ref. No.	Part No.	Description	Remarks
IC751	8-749-012-83	IC RS-180-T	(TR728E/TRV78/TRV78E/TRV98E)
IC751	8-749-018-83	IC PNA4S13M02	(TRV49/TRV49E/TRV59E/TRV98)
IC752	8-759-712-78	IC BH7871FV-E2	
IC753	8-759-489-19	IC UPC6756GR-8JG-E2	(TRV78/TRV78E/TRV98E)
IC753	8-759-637-19	IC NJM3230V(TE2)	(TR818/TRV68/TRV88/TRV98)
IC3901	8-759-566-96	IC AN2920FHQ-EB	(TRV98)

< COIL >

Ref. No.	Part No.	Description		Remarks
L751	1-469-525-91	INDUCTOR	10uH	(TR818/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
L3902	1-469-525-91	INDUCTOR	10uH	(TRV98)
L3903	1-412-948-11	INDUCTOR	5.6uH	(TRV98)
L3904	1-412-957-11	INDUCTOR	33uH	(TRV98)
L3905	1-412-957-11	INDUCTOR	33uH	(TRV98)
L3906	1-469-525-91	INDUCTOR	10uH	(TRV98)

< TRANSISTOR >

Ref. No.	Part No.	Description		Remarks
Q3901	8-729-037-53	TRANSISTOR	2SA1832F-Y/GR(TPL3)	(TRV98)
Q3902	8-729-026-48	TRANSISTOR	2SA1037AK-T146-Q	(TRV98)
Q3903	8-729-920-85	TRANSISTOR	2SD1664-T100-QR	(TRV98)
Q3904	8-729-052-52	TRANSISTOR	2SC4738F-Y/GR(TPL3)	(EXCEPT TRV98)

MI-040 MI-041 PD-131

Ref. No.	Part No.	Description			Remarks
		< RESISTOR >			
R757	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R769	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R774	1-216-836-11	METAL CHIP	18K	5%	1/16W
R775	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R776	1-216-864-91	SHORT	0		
R779	1-216-857-11	METAL CHIP	1M	5%	1/16W (TR818/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
R780	1-216-833-11	METAL CHIP	10K	5%	1/16W (TR818/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
R782	1-216-833-11	METAL CHIP	10K	5%	1/16W (TR818/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
R783	1-216-857-11	METAL CHIP	1M	5%	1/16W (TR818/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
R785	1-216-835-11	METAL CHIP	15K	5%	1/16W (TR818/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
R788	1-216-839-11	METAL CHIP	33K	5%	1/16W
R797	1-216-824-11	METAL CHIP	1.8K	5%	1/16W
R3901	1-216-839-11	METAL CHIP	33K	5%	1/16W (TRV98)
R3902	1-216-829-11	METAL CHIP	4.7K	5%	1/16W (TRV98)
R3903	1-216-839-11	METAL CHIP	33K	5%	1/16W (TRV98)
R3904	1-216-834-11	METAL CHIP	12K	5%	1/16W (TRV98)
R3905	1-216-857-11	METAL CHIP	1M	5%	1/16W (TRV98)
R3907	1-218-879-11	METAL CHIP	22K	0.5%	1/16W (TRV98)
R3908	1-216-815-11	METAL CHIP	330	5%	1/16W (TRV98)
R3909	1-216-821-11	METAL CHIP	1K	5%	1/16W (TRV98)
R3912	1-216-819-11	METAL CHIP	680	5%	1/16W (TRV98)
R3913	1-216-847-11	METAL CHIP	150K	5%	1/16W (TRV98)
R3914	1-216-847-11	METAL CHIP	150K	5%	1/16W (TRV98)
R3915	1-216-818-11	METAL CHIP	560	5%	1/16W (TRV98)
R3916	1-216-831-11	METAL CHIP	6.8K	5%	1/16W (TRV98)
R3917	1-216-817-11	METAL CHIP	470	5%	1/16W (TRV98)
R3919	1-216-823-11	METAL CHIP	1.5K	5%	1/16W (TRV98)
R3920	1-216-817-11	METAL CHIP	470	5%	1/16W (TRV98)
R3921	1-216-817-11	METAL CHIP	470	5%	1/16W (TRV98)
R3922	1-216-864-91	SHORT	0		(TRV98)
R3923	1-216-817-11	METAL CHIP	470	5%	1/16W
R3924	1-216-295-11	SHORT	0		(TRV98)
R3925	1-216-001-00	METAL CHIP	10	5%	1/10W (TRV98)
R3925	1-216-027-00	METAL CHIP	120	5%	1/10W (EXCEPT TRV98)
R3926	1-216-800-11	RES-CHIP	18	5%	1/16W (TRV98)
R3927	1-216-295-11	SHORT	0		(EXCEPT TRV98)
R3929	1-216-027-00	METAL CHIP	120	5%	1/10W (EXCEPT TRV98)
R3931	1-216-834-11	METAL CHIP	12K	5%	1/16W (TRV98)
R3948	1-216-295-11	SHORT	0		(EXCEPT TRV98)
		< COMPOSITION CIRCUIT BLOCK >			
RB751	1-239-702-81	RESISTOR, NETWORK 22K			(TR818/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
RB752	1-239-702-81	RESISTOR, NETWORK 22K			(TR818/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
		< SENSOR >			
SE751	1-418-042-11	SENSOR, ANGULAR VELOCITY (PITCH)			(TR818/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
SE752	1-418-042-21	SENSOR, ANGULAR VELOCITY (YAW)			(TR818/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
	A-7074-667-A	PD-131 BOARD, COMPLETE (TRV98/TRV98E) **************************************			
	A-7074-680-A	PD-131 BOARD, COMPLETE			(TRV49/TRV49E/TRV58/TRV58E/ TRV59E/TRV68/TRV78/TRV78E)
		***************************************			
	A-7074-701-A	PD-131 BOARD, COMPLETE (TRV88) ******************************			
					(Ref.No.;10000 Series)
		< CAPACITOR >			
C5501	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C5503	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5504	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5505	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C5506	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C5507	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C5509	1-126-602-11	ELECT CHIP	3.3uF	20%	50V
C5510	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C5511	1-164-739-11	CERAMIC CHIP	560PF	5%	50V
C5512	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5513	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5514	1-119-750-11	TANTAL. CHIP	22uF	20%	6.3V
C5515	1-164-357-11	CERAMIC CHIP	0.001uF	5%	50V
C5516	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C5517	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C5518	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C5519	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C5520	1-124-779-00	ELECT CHIP	10uF	20%	16V
C5521	1-127-573-11	CERAMIC CHIP	1uF	10%	16V
C5522	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5523	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5524	1-127-573-11	CERAMIC CHIP	1uF	10%	16V
C5527	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C5528	1-126-193-11	ELECT	1uF	20%	50V
C5530	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V

Ref. No.	Part No.	Description			Remarks
C5531	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C5603	1-164-657-11	CERAMIC CHIP	0.015uF	10%	50V
C5604	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5605	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
⚠C5606	1-131-959-91	CERAMIC CHIP	12PF	10%	3KV
C5607	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
		< CONNECTOR >			
CN5501	1-815-031-11	CONNECTOR, FFC/FPC (ZIF) 24P			
* CN5502	1-573-984-11	CONNECTOR, BOARD TO BOARD 10P			
CN5601	1-764-709-11	CONNECTOR, FFC/FPC (LIF) 10P			
CN5701	1-794-998-21	PIN, CONNECTOR 20P			
CN5702	1-573-346-21	CONNECTOR, FFC/FPC 6P			
		< DIODE >			
D5502	8-713-102-80	DIODE 1T369-01-T8A			
D5503	8-719-073-01	DIODE MA111-(K8).S0			
D5503	8-719-988-61	DIODE 1SS355TE-17			
D5601	8-719-073-01	DIODE MA111-(K8).S0			
D5601	8-719-988-61	DIODE 1SS355TE-17			
		< FERRITE BEAD >			
FB003	1-414-760-21	FERRITE	0UH		
FB5501	1-414-760-21	FERRITE	0UH		
FB5501	1-414-760-21	FERRITE	0UH		
FB5501	1-414-760-21	FERRITE	0UH		
FB5501	1-500-329-21	FERRITE	0UH		
FB5502	1-414-760-21	FERRITE	0UH		
FB5502	1-414-760-21	FERRITE	0UH		
FB5502	1-414-760-21	FERRITE	0UH		
FB5502	1-500-329-21	FERRITE	0UH		
		< IC >			
IC5501	8-759-660-92	IC RB5P003AM1			
IC5502	8-759-714-77	IC LZ9FF474			
IC5601	8-759-564-49	IC TC7W53FU(TE12R)			
IC5602	8-759-075-70	IC TA75S393F-TE85R			
		< COIL >			
L001	1-419-354-21	INDUCTOR	22uH		
L5501	1-469-525-91	INDUCTOR	10uH		
L5502	1-469-525-91	INDUCTOR	10uH		
L5503	1-412-949-21	INDUCTOR	6.8uH		
					(TRV88/TRV98/TRV98E)
L5503	1-412-956-21	INDUCTOR	27uH		
					(TRV49/TRV49E/TRV58/TRV58E/ TRV59E/TRV68/TRV78/TRV78E)
L5601	1-419-387-11	INDUCTOR	100uH		
		< TRANSISTOR >			
Q5502	8-729-041-23	TRANSISTOR	NDS356AP		
Q5503	8-729-054-48	TRANSISTOR	N1B04FE-Y/GR(TPLR3)		
Q5504	8-729-054-48	TRANSISTOR	N1B04FE-Y/GR(TPLR3)		
Q5505	8-729-042-29	TRANSISTOR	RN1104F(TPL3)		
Q5601	8-729-042-29	TRANSISTOR	RN1104F(TPL3)		
Q5602	8-729-039-43	TRANSISTOR	FP216-TL		

Ref. No.	Part No.	Description			Remarks
		< RESISTOR >			
R5501	1-216-853-11	METAL CHIP	470K	5%	1/16W
R5503	1-218-893-11	METAL CHIP	82K	0.5%	1/16W
					(TRV88/TRV98/TRV98E)
R5503	1-218-895-11	METAL CHIP	100K	0.5%	1/16W
					(TRV49/TRV49E/TRV58/TRV58E/ TRV59E/TRV68/TRV78/TRV78E)
R5505	1-216-835-11	METAL CHIP	15K	5%	1/16W
R5506	1-216-826-11	METAL CHIP	2.7K	5%	1/16W
R5507	1-216-841-11	METAL CHIP	47K	5%	1/16W
R5508	1-216-843-11	METAL CHIP	68K	5%	1/16W
R5509	1-216-837-11	METAL CHIP	22K	5%	1/16W
R5510	1-216-843-11	METAL CHIP	68K	5%	1/16W
R5511	1-216-857-11	METAL CHIP	1M	5%	1/16W
R5512	1-216-845-11	METAL CHIP	100K	5%	1/16W
R5513	1-216-857-11	METAL CHIP	1M	5%	1/16W
R5515	1-216-864-91	SHORT	0		
R5516	1-216-833-11	METAL CHIP	10K	5%	1/16W
R5519	1-216-864-91	SHORT	0		
R5521	1-216-841-11	METAL CHIP	47K	5%	1/16W
R5522	1-216-821-11	METAL CHIP	1K	5%	1/16W
					(TRV49/TRV49E/TRV58/TRV58E/ TRV59E/TRV68/TRV78/TRV78E)
R5522	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
					(TRV88)
R5522	1-216-830-11	METAL CHIP	5.6K	5%	1/16W
					(TRV98/TRV98E)
R5523	1-216-864-91	SHORT	0		
R5531	1-216-848-11	METAL CHIP	180K	5%	1/16W
R5532	1-216-845-11	METAL CHIP	100K	5%	1/16W
R5533	1-216-857-11	METAL CHIP	1M	5%	1/16W
R5534	1-216-864-91	SHORT	0		
R5535	1-216-864-91	SHORT	0		
R5601	1-216-824-11	METAL CHIP	1.8K	5%	1/16W
R5602	1-216-845-11	METAL CHIP	100K	5%	1/16W
R5603	1-216-834-11	METAL CHIP	12K	5%	1/16W
R5604	1-216-824-11	METAL CHIP	1.8K	5%	1/16W
R5606	1-216-837-11	METAL CHIP	22K	5%	1/16W
R5607	1-216-817-11	METAL CHIP	470	5%	1/16W
R5610	1-216-864-91	SHORT	0		
R5702	1-216-833-11	METAL CHIP	10K	5%	1/16W
		< COMPOSITION CIRCUIT BLOCK >			
RB5501	1-234-372-21	RES, NETWORK 100X4 (1005)			
RB5502	1-239-698-11	RESISTOR, NETWORK 10K			
RB5503	1-239-661-81	RESISTOR, NETWORK 1M			
RB5601	1-239-698-11	RESISTOR, NETWORK 10K			
					(TRV49/TRV49E/TRV58/TRV58E/ TRV59E/TRV68/TRV78/TRV78E)
RB5601	1-239-701-81	RESISTOR, NETWORK 18K			
					(TRV88/TRV98/TRV98E)
		< TRANSFORMER >			
⚠T5601	1-435-227-11	TRANSFORMER, INVERTER			

Note :	**Note :**
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

VC-251

Ref. No.	Part No.	Description			Remarks
	A-7096-402-A	VC-251 BOARD, COMPLETE (SERVICE)(TR618)			
		**			
	A-7096-403-A	VC-251 BOARD, COMPLETE (SERVICE)(TR818)			
		**			
	A-7096-404-A	VC-251 BOARD, COMPLETE (SERVICE)			(TR618E/TR718E/TR728E)
		**			
	A-7096-405-A	VC-251 BOARD, COMPLETE (SERVICE)			(TRV68/TRV78/TRV88/TRV98)
		**			
	A-7096-406-A	VC-251 BOARD, COMPLETE (SERVICE)			(TRV78E/TRV98E)
		**			
	A-7096-409-A	VC-251 BOARD, COMPLETE (SERVICE)			(TRV49/TRV58)
		**			
	A-7096-456-A	VC-251 BOARD, COMPLETE (SERVICE)			(TRV49E/TRV58E/TRV59E)
		**			
					(Ref.No.;10000 Series)
		< CAPACITOR >			
C001	1-162-960-11	CERAMIC CHIP	220PF	10%	50V
C002	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C003	1-119-923-81	CERAMIC CHIP	0.047uF	10%	10V
C004	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C005	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C008	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C009	1-164-172-11	CERAMIC CHIP	0.0056uF	10%	25V
C010	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V
C011	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V
C012	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C013	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C014	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C015	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
					(TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/ TRV78/TRV78E/TRV88/TRV98/TRV98E)
C016	1-164-937-11	CERAMIC CHIP	0.001uF	10%	16V
C018	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
					(TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/ TRV78/TRV78E/TRV88/TRV98/TRV98E)
C019	1-164-937-11	CERAMIC CHIP	0.001uF	10%	16V
C020	1-117-808-91	CERAMIC CHIP	10uF	10%	10V
C021	1-164-937-11	CERAMIC CHIP	0.001uF	10%	16V
C022	1-164-937-11	CERAMIC CHIP	0.001uF	10%	16V
C023	1-164-937-11	CERAMIC CHIP	0.001uF	10%	16V
C024	1-164-937-11	CERAMIC CHIP	0.001uF	10%	16V
C025	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C026	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
					(TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/ TRV78/TRV78E/TRV88/TRV98/TRV98E)
C027	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C028	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C029	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C030	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
					(TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/ TRV78/TRV78E/TRV88/TRV98/TRV98E)
C031	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C032	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
					(TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/ TRV78/TRV78E/TRV88/TRV98/TRV98E)
C033	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C034	1-162-974-11	CERAMIC CHIP	0.01uF		50V
					(TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/ TRV78/TRV78E/TRV88/TRV98/TRV98E)
C035	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C036	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C037	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C038	1-127-688-21	TANTAL. CHIP	10uF	20%	6.3V
C039	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C040	1-119-750-11	TANTAL. CHIP	22uF	20%	6.3V
C041	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C042	1-164-506-11	CERAMIC CHIP	4.7uF		16V
C043	1-164-506-11	CERAMIC CHIP	4.7uF		16V
C045	1-119-749-11	TANTAL. CHIP	33uF	20%	4V
C046	1-119-750-11	TANTAL. CHIP	22uF	20%	6.3V
C047	1-164-505-11	CERAMIC CHIP	2.2uF		16V
					(TR818/TRV49/TRV49E/TRV58/TRV58E/TRV59E/ TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
C048	1-164-156-11	CERAMIC CHIP	0.1uF		25V
					(TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/ TRV78/TRV78E/TRV88/TRV98/TRV98E)
C049	1-127-688-21	TANTAL. CHIP	10uF	20%	6.3V
C050	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C051	1-119-750-11	TANTAL. CHIP	22uF	20%	6.3V
C052	1-127-688-21	TANTAL. CHIP	10uF	20%	6.3V
C053	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C054	1-164-506-11	CERAMIC CHIP	4.7uF		16V
C055	1-164-506-11	CERAMIC CHIP	4.7uF		16V
C056	1-164-346-11	CERAMIC CHIP	1uF		16V
					(TR818)
C057	1-164-505-11	CERAMIC CHIP	2.2uF		16V
					(TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/ TRV78/TRV78E/TRV88/TRV98/TRV98E)
C058	1-164-505-11	CERAMIC CHIP	2.2uF		16V
					(TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/ TRV78/TRV78E/TRV88/TRV98/TRV98E)
C059	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C061	1-119-750-11	TANTAL. CHIP	22uF	20%	6.3V
C071	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
					(TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/ TRV78/TRV78E/TRV88/TRV98/TRV98E)
C072	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
					(TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/ TRV78/TRV78E/TRV88/TRV98/TRV98E)
C101	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C102	1-104-752-11	TANTAL. CHIP	33uF	20%	6.3V
C103	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C104	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C106	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V
C107	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V
C108	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C109	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C110	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C111	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C112	1-162-926-11	CERAMIC CHIP	82PF	5%	50V
C113	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C114	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C115	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C116	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C117	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C118	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V

Ref. No.	Part No.	Description			Remarks
C119	1-127-688-21	TANTAL. CHIP	10uF	20%	6.3V
C121	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C123	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C124	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C125	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C126	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C127	1-164-937-11	CERAMIC CHIP	0.001uF	10%	16V
C128	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C129	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C130	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C131	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C132	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C133	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C134	1-117-863-11	CERAMIC CHIP	0.47uF	10%	6.3V
C135	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C136	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C151	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C152	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C154	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C155	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C156	1-164-392-11	CERAMIC CHIP	390PF	5%	50V
C157	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C158	1-135-210-11	TANTALUM CHIP	4.7uF	20%	10V
C160	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C161	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C162	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C163	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C164	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V (TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/ TRV78/TRV78E/TRV88/TRV98/TRV98E)
C165	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V (TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/ TRV78/TRV78E/TRV88/TRV98/TRV98E)
C166	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V (TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/ TRV78/TRV78E/TRV88/TRV98/TRV98E)
C167	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C168	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C169	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C170	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C171	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C172	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C173	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C174	1-117-863-11	CERAMIC CHIP	0.47uF	10%	6.3V
C175	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C176	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C177	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C178	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C182	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C184	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C185	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C186	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C187	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C188	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C190	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C195	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C221	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C223	1-110-446-11	ELECT CHIP	10uF	20%	6.3V
C225	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C233	1-110-423-11	ELECT CHIP	2.2uF	20%	25V
C235	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V

Ref. No.	Part No.	Description			Remarks
C238	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C246	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C247	1-126-601-11	ELECT CHIP	2.2uF	20%	50V
C248	1-126-601-11	ELECT CHIP	2.2uF	20%	50V
C249	1-126-246-11	ELECT CHIP	220uF	20%	4V
C250	1-126-246-11	ELECT CHIP	220uF	20%	4V
C252	1-124-779-00	ELECT CHIP	10uF	20%	16V
C271	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C272	1-164-937-11	CERAMIC CHIP	0.001uF	10%	16V
C273	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C274	1-127-688-21	TANTAL. CHIP	10uF	20%	6.3V (TR618/TR618E/TR718E/TR728E/TRV49/ TRV49E/TRV58/TRV58E/TRV59E)
C275	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V (TR618/TR618E/TR718E/TR728E/TRV49/ TRV49E/TRV58/TRV58E/TRV59E)
C276	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C277	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C278	1-131-861-91	TANTAL. CHIP	4.7uF	20%	20V
C279	1-127-688-21	TANTAL. CHIP	10uF	20%	6.3V
C280	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C281	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C282	1-164-937-11	CERAMIC CHIP	0.001uF	10%	16V
C283	1-162-913-11	CERAMIC CHIP	8PF	0.50PF	50V
C284	1-115-339-11	CERAMIC CHIP	0.1uF	10%	50V
C285	1-164-937-11	CERAMIC CHIP	0.001uF	10%	16V
C286	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C287	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C288	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C289	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C290	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C291	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C292	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C293	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C294	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C295	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C296	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C297	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C302	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C303	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C304	1-127-688-21	TANTAL. CHIP	10uF	20%	6.3V
C305	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C306	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C307	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C308	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C309	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C310	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C311	1-164-937-11	CERAMIC CHIP	0.001uF	10%	16V
C312	1-117-863-11	CERAMIC CHIP	0.47uF	10%	6.3V
C313	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C315	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C316	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C317	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C318	1-127-688-21	TANTAL. CHIP	10uF	20%	6.3V
C319	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C352	1-124-779-00	ELECT CHIP	10uF	20%	16V
C354	1-124-779-00	ELECT CHIP	10uF	20%	16V
C357	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C358	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V (TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/ TRV78/TRV78E/TRV88/TRV98/TRV98E)

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Ref. No.	Part No.	Description			Remarks
C359	1-124-779-00	ELECT CHIP	10uF	20%	16V
C361	1-126-607-11	ELECT CHIP	47uF	20%	4V
		(TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)			
C363	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
		(TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)			
C364	1-117-863-11	CERAMIC CHIP	0.47uF	10%	6.3V
C365	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
		(TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)			
C366	1-126-602-11	ELECT CHIP	3.3uF	20%	50V
C367	1-124-779-00	ELECT CHIP	10uF	20%	16V
		(TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)			
C369	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
		(TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)			
C371	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
		(TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)			
C372	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
		(TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)			
C374	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C375	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C380	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C381	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C383	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C384	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C385	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C386	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C389	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C390	1-164-937-11	CERAMIC CHIP	0.001uF	10%	16V
C392	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C393	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C394	1-117-863-11	CERAMIC CHIP	0.47uF	10%	6.3V
C396	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C397	1-162-925-11	CERAMIC CHIP	68PF	5%	50V
C398	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C401	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C402	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C403	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C404	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C405	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C406	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C407	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C408	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C410	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C411	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C451	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C452	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C453	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C454	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C455	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V
C456	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V
C457	1-119-923-81	CERAMIC CHIP	0.047uF	10%	10V
C458	1-126-603-11	ELECT CHIP	4.7uF	20%	35V
C459	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C460	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C461	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C462	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C463	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C464	1-162-960-11	CERAMIC CHIP	220PF	10%	50V
C465	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C466	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C467	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C468	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C469	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C470	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C471	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C472	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
		(TR618E/TR718E/TR728E/TRV49E/TRV58E/TRV59E/TRV78E/TRV98E)			
C473	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V
		(TR618E/TR718E/TR728E/TRV49E/TRV58E/TRV59E/TRV78E/TRV98E)			
C474	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C475	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V
C476	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C477	1-119-923-81	CERAMIC CHIP	0.047uF	10%	10V
C478	1-119-923-81	CERAMIC CHIP	0.047uF	10%	10V
C479	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C480	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C481	1-164-937-11	CERAMIC CHIP	0.001uF	10%	16V
C482	1-164-937-11	CERAMIC CHIP	0.001uF	10%	16V
C483	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C484	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C501	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C502	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C503	1-126-607-11	ELECT CHIP	47uF	20%	4V
C504	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C506	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C507	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C508	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C509	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C510	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C511	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C512	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C513	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V
C514	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C515	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C516	1-162-918-11	CERAMIC CHIP	18PF	5%	50V
C517	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C518	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C519	1-119-923-81	CERAMIC CHIP	0.047uF	10%	10V
		(TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)			
C601	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C602	1-127-688-21	TANTAL. CHIP	10uF	20%	6.3V
C603	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C701	1-135-639-21	ELECT CHIP	47uF	20%	6.3V
C708	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
					(EXCEPT TR818)

Ref. No.	Part No.	Description	Remarks
		< CONNECTOR >	
* CN001	1-764-177-11	PIN, CONNECTOR (SMD)(1.5MM) 7P	
CN101	1-766-346-21	CONNECTOR, FFC/FPC 16P	
CN271	1-779-331-11	CONNECTOR, FFC/FPC 14P	
CN301	1-750-360-21	CONNECTOR, FFC/FPC (ZIF) 24P	
CN701	1-794-998-21	PIN, CONNECTOR 20P	(TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
CN702	1-766-350-21	CONNECTOR, FFC/FPC 20P	
CN703	1-766-354-21	CONNECTOR, FFC/FPC 24P	
CN704	1-766-644-21	CONNECTOR, FFC/FPC 8P	
CN706	1-766-340-21	CONNECTOR, FFC/FPC 10P	
CN707	1-766-342-21	CONNECTOR, FFC/FPC 12P	
CN708	1-779-334-11	CONNECTOR, FFC/FPC 20P (TR818)	
CN709	1-815-031-11	CONNECTOR, FFC/FPC (ZIF) 24P	
CN710	1-750-076-21	CONNECTOR, FFC/FPC 12P	
CN711	1-764-704-21	CONNECTOR, FFC/FPC (LIF) 5P	
CN712	1-766-345-21	CONNECTOR, FFC/FPC 15P	
CN713	1-774-711-41	CONNECTOR, BOARD TO BOARD 20P	
* CN715	1-778-283-11	CONNECTOR, FFC/FPC 4P (EXCEPT TR818)	
		< DIODE >	
D001	8-719-421-27	DIODE MA728-(K8).S0	
D002	8-719-062-16	DIODE 01ZA8.2(TPL3)	
D004	8-719-073-03	DIODE MA8082-(K8).S0	
D005	8-719-078-02	DIODE 1SS357(T3SONY1)	
D006	8-719-081-19	DIODE 1SS383(T5RSONY1)	
D007	8-719-081-19	DIODE 1SS383(T5RSONY1)	
D010	8-719-078-02	DIODE 1SS357(T3SONY1)	(TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
D151	8-719-081-25	DIODE JDV3C11(TPH3)	
D152	8-719-081-25	DIODE JDV3C11(TPH3)	
D271	8-719-073-01	DIODE MA111-(K8).S0	(TR618/TR618E/TR718E/TR728E/TRV49/TRV49E/TRV58/TRV58E/TRV59E)
D272	8-719-082-63	DIODE 1SV329(TPL3)	
D301	8-719-073-01	DIODE MA111-(K8).S0	
D501	8-719-421-67	DIODE MA132WK-(K8).SO	
D503	8-719-421-27	DIODE MA728-(K8).S0	
D504	8-719-073-01	DIODE MA111-(K8).S0	
D702	8-719-062-16	DIODE 01ZA8.2(TPL3)	
		< PIN CONNECTOR >	
ET101	1-815-032-21	PIN, CONNECTOR (CASE, SHIELD)	
ET102	1-815-032-21	PIN, CONNECTOR (CASE, SHIELD)	
		< FUSE >	
⚠F001	1-576-406-21	FUSE, MICRO (1.4A) (1608)	
⚠F002	1-576-406-21	FUSE, MICRO (1.4A) (1608)	
⚠F003	1-576-406-21	FUSE, MICRO (1.4A) (1608)	
⚠F004	1-576-406-21	FUSE, MICRO (1.4A) (1608)	(TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)

Ref. No.	Part No.	Description	Remarks
		< FERRITE BEAD >	
FB001	1-414-760-21	FERRITE 0UH	
FB003	1-414-760-21	FERRITE 0UH	(TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
FB101	1-414-228-11	FERRITE 0UH	
FB102	1-414-228-11	FERRITE 0UH	
FB152	1-414-760-21	FERRITE 0UH	
FB153	1-414-760-21	FERRITE 0UH	
FB154	1-414-760-21	FERRITE 0UH	
FB221	1-414-760-21	FERRITE 0UH	
FB271	1-414-760-21	FERRITE 0UH	(TR618/TR618E/TR718E/TR728E/TRV49/TRV49E/TRV58/TRV58E/TRV59E)
FB273	1-500-284-21	FERRITE 0UH	
FB274	1-500-284-21	FERRITE 0UH	
FB275	1-414-760-21	FERRITE 0UH	
FB276	1-500-284-21	FERRITE 0UH	
FB601	1-414-760-21	FERRITE 0UH	
		< IC >	
IC001	8-752-090-20	IC CXA3057R-T6	
IC101	8-752-093-69	IC CXA3265R-T4	
IC151	8-759-670-78	IC HG75C012SFL	
IC153	8-759-714-10	IC BU3095-01FV-E2	
IC221	8-759-599-37	IC AN2225FHQ-EB	
IC271	8-752-386-72	IC CXD2444R-T4	
IC272	8-759-699-92	IC AD80013AJSTRL	
IC301	8-759-637-96	IC MPC17A135DTAEL	
IC302	8-759-681-42	IC NJM12902V(TE2)	
IC351	8-752-093-74	IC CXA3285R-T6	
IC401	8-759-593-47	IC AK6417AM-E2	(TR618/TR818/TRV49/TRV58/TRV68/TRV78/TRV88/TRV98)
IC401	8-759-640-87	IC BR9016RFV-E2	(TR618E/TR718E/TR728E/TRV49E/TRV58E/TRV59E/TRV78E/TRV98E)
IC402	8-759-836-63	IC MB91191RPFF-G-166-BND-ER	
IC451	8-759-640-85	IC CXA8096R-TBM	
IC502	8-759-424-79	IC S-8423YFS-T2	(TRV49/TRV58/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
IC502	8-759-660-94	IC NJU7285AV-TE2	(TR618/TR618E/TR718E/TR728E/TR818/TRV49E/TRV58E/TRV59E)
IC503	8-752-921-65	IC CXP921048A-033R-T6	
IC504	8-759-653-63	IC S-817A36ANB-CUZ-T2	
IC601	8-759-713-19	IC BH2222FV-E2	
		< COIL >	
L001	1-416-669-11	INDUCTOR 22uH	(TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
L002	1-416-670-11	INDUCTOR 33uH	
L003	1-412-056-11	INDUCTOR 4.7uH	(TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
L004	1-416-669-11	INDUCTOR 22uH	
L005	1-419-354-21	INDUCTOR 22uH	

Note :	Note :
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

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Ref. No.	Part No.	Description		Remarks
L006	1-416-670-11	INDUCTOR	33uH	
L007	1-419-354-21	INDUCTOR	22uH	
L008	1-469-524-91	INDUCTOR	4.7uH	
L009	1-469-524-91	INDUCTOR	4.7uH	
L010	1-469-524-91	INDUCTOR	4.7uH	
L011	1-469-524-91	INDUCTOR	4.7uH	
L012	1-414-400-41	INDUCTOR	22uH	
L013	1-469-524-91	INDUCTOR	4.7uH	
L014	1-469-526-91	INDUCTOR	22uH	
L016	1-414-400-41	INDUCTOR	22uH	
L101	1-414-406-41	INDUCTOR	220uH	
L102	1-412-952-11	INDUCTOR	12uH	
L103	1-469-526-91	INDUCTOR	22uH	
L104	1-414-406-41	INDUCTOR	220uH	
L151	1-469-570-21	INDUCTOR	10uH	
L152	1-469-570-21	INDUCTOR	10uH	
L154	1-469-570-21	INDUCTOR	10uH	
L155	1-469-570-21	INDUCTOR	10uH	
L156	1-412-945-11	INDUCTOR	3.3uH	
L221	1-469-525-91	INDUCTOR	10uH	
L224	1-469-525-91	INDUCTOR	10uH	
L271	1-469-570-21	INDUCTOR	10uH	
L272	1-469-525-91	INDUCTOR	10uH	
L301	1-469-525-91	INDUCTOR	10uH	
L303	1-469-570-21	INDUCTOR	10uH	
L601	1-469-570-21	INDUCTOR	10uH	
L705	1-419-860-21	INDUCTOR	10uH (EXCEPT TR818)	
		< TRANSISTOR >		
Q001	8-729-038-05	TRANSISTOR	HN1K02FU(T5RSONY)	
Q002	8-729-051-49	TRANSISTOR	TPC8305(TE12L)	
Q003	8-729-101-07	TRANSISTOR	2SB798-T1-DLDK	
Q004	8-729-042-31	TRANSISTOR	UN9213J-(K8).SO	(TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
Q004	8-729-052-64	TRANSISTOR	DTC144EHT2L	(TR618/TR618E/TR718E/TR728E/TR818)
Q006	8-729-054-82	TRANSISTOR	XN09D6100LS0	(TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
Q007	8-729-043-60	TRANSISTOR	CPH6102-TL	
Q008	8-729-054-82	TRANSISTOR	XN09D6100LS0	
Q009	8-729-054-82	TRANSISTOR	XN09D6100LS0	
Q010	8-729-054-82	TRANSISTOR	XN09D6100LS0	
Q011	8-729-054-82	TRANSISTOR	XN09D6100LS0	
Q012	8-729-054-82	TRANSISTOR	XN09D6100LS0	
Q014	8-729-053-52	TRANSISTOR	N1C01FE-Y/GR(TPLR3)	
Q015	8-729-101-07	TRANSISTOR	2SB798-T1-DLDK	
Q016	8-729-042-26	TRANSISTOR	2SB1462J-QR(K8).SO	
Q018	8-729-052-64	TRANSISTOR	DTC144EHT2L	
Q019	8-729-053-54	TRANSISTOR	HN1A01FE-Y/GR(TPLR3)	
Q020	8-729-053-52	TRANSISTOR	HN1C01FE-Y/GR(TPLR3)	(TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
Q021	8-729-052-66	TRANSISTOR	2SC4617HT2L	
Q022	8-729-052-65	TRANSISTOR	2SC4617HT2L	

Ref. No.	Part No.	Description		Remarks
Q023	8-729-052-65	TRANSISTOR	2SA1774HT2L	
Q026	8-729-053-54	TRANSISTOR	HN1A01FE-Y/GR(TPLR3)	(TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
Q027	8-729-042-28	TRANSISTOR	2SD2216J-QR(K8).SO	(TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
Q071	8-729-042-31	TRANSISTOR	UN9213J-(K8).SO	(TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
Q072	8-729-041-76	TRANSISTOR	NDS356AP	(TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
Q101	8-729-047-19	TRANSISTOR	2SA1965-S-TL	
Q102	8-729-052-65	TRANSISTOR	2SA1774HT2L	
Q103	8-729-054-48	TRANSISTOR	HN1B04FE-Y/GR(TPLR3)	
Q104	8-729-052-64	TRANSISTOR	DTC144EHT2L	
Q105	8-729-053-58	TRANSISTOR	RN1904FE(TPLR3)	
Q107	8-729-052-65	TRANSISTOR	2SA1774HT2L	
Q151	8-729-053-53	TRANSISTOR	HN1B04FE-Y/GR(TPLR3)	
Q152	8-729-042-26	TRANSISTOR	2SB1462J-QR(K8).SO	(TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
Q153	8-729-042-26	TRANSISTOR	2SB1462J-QR(K8).SO	(TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
Q154	8-729-042-26	TRANSISTOR	2SA1832F-Y/GR(TPL3)	(TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
Q156	8-729-052-65	TRANSISTOR	2SA1774HT2L	
Q158	8-729-052-65	TRANSISTOR	2SA1774HT2L	
Q301	8-729-052-66	TRANSISTOR	2SC4617HT2L	
Q302	8-729-054-51	TRANSISTOR	RN2910FE(TPLR3)	
Q303	8-729-052-66	TRANSISTOR	2SC4617HT2L	
Q352	8-729-052-63	TRANSISTOR	DTC143THT2L	(TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
Q354	8-729-053-52	TRANSISTOR	HN1C01FE-Y/GR(TPLR3)	(TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
Q355	8-729-053-56	TRANSISTOR	RN4990FE(TPLR3)	
Q451	8-729-052-66	TRANSISTOR	2SC4617HT2L	
Q501	8-729-041-43	TRANSISTOR	HN1L02FU(TE85R)	
Q701	8-729-052-64	TRANSISTOR	DTC144EHT2L	
Q702	8-729-043-94	TRANSISTOR	CPH3106-PM-TL	(EXCEPT TR818)
Q703	8-729-028-26	TRANSISTOR	2SK1829(TE85L)	(EXCEPT TR818)
Q704	8-729-903-53	TRANSISTOR	2SB1132-T1 00Q	
Q705	8-729-052-66	TRANSISTOR	2SC4617HT2L	
		< RESISTOR >		
R001	1-216-837-11	METAL CHIP	22K 5% 1/16W	
R002	1-216-839-11	METAL CHIP	33K 5% 1/16W	
R003	1-216-821-11	METAL CHIP	1K 5% 1/16W	
R006	1-216-837-11	METAL CHIP	22K 5% 1/16W	
R007	1-216-821-11	METAL CHIP	1K 5% 1/16W	
R008	1-216-853-11	METAL CHIP	470K 5% 1/16W	
R010	1-216-857-11	METAL CHIP	1M 5% 1/16W	
R011	1-216-813-11	METAL CHIP	220 5% 1/16W	
R012	1-216-839-11	METAL CHIP	33K 5% 1/16W	
R013	1-216-801-11	METAL CHIP	22 5% 1/16W	

Ref. No.	Part No.	Description			Remarks
R014	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R016	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R017	1-216-821-11	METAL CHIP	1K	5%	1/16W
R018	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R020	1-216-833-11	METAL CHIP	10K	5%	1/16W (TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
R021	1-216-837-11	METAL CHIP	22K	5%	1/16W (TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
R022	1-216-841-11	METAL CHIP	47K	5%	1/16W
R023	1-216-839-11	METAL CHIP	33K	5%	1/16W (TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
R025	1-216-841-11	METAL CHIP	47K	5%	1/16W
R026	1-218-879-11	METAL CHIP	22K	0.5%	1/16W
R027	1-218-871-11	METAL CHIP	10K	0.5%	1/16W
R028	1-218-877-11	METAL CHIP	18K	0.5%	1/16W
R029	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R031	1-216-841-11	METAL CHIP	47K	5%	1/16W
R032	1-216-837-11	METAL CHIP	22K	5%	1/16W
R033	1-218-879-11	METAL CHIP	22K	0.5%	1/16W
R034	1-218-871-11	METAL CHIP	10K	0.5%	1/16W
R035	1-216-841-11	METAL CHIP	47K	5%	1/16W
R036	1-216-845-11	METAL CHIP	100K	5%	1/16W
R037	1-216-845-11	METAL CHIP	100K	5%	1/16W
R038	1-216-837-11	METAL CHIP	22K	5%	1/16W
R039	1-216-864-91	SHORT	0		(TR618/TR618E/TR718E/TR728E/TRV49/TRV49E/TRV58/TRV58E/TRV59E)
R040	1-216-837-11	METAL CHIP	22K	5%	1/16W
R041	1-218-891-11	METAL CHIP	68K	0.5%	1/16W (TR818/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
R041	1-218-895-11	METAL CHIP	100K	0.5%	1/16W (TR618/TR618E/TR718E/TR728E/TRV49/TRV49E/TRV58/TRV58E/TRV59E)
R042	1-218-871-11	METAL CHIP	10K	0.5%	1/16W (TR618/TR618E/TR718E/TR728E/TRV49/TRV49E/TRV58/TRV58E/TRV59E)
R042	1-218-879-11	METAL CHIP	22K	0.5%	1/16W (TR818/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
R043	1-218-903-11	METAL CHIP	220K	0.5%	1/16W
R044	1-218-895-11	METAL CHIP	100K	0.5%	1/16W (TR818/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
R045	1-218-887-11	METAL CHIP	47K	0.5%	1/16W (TR818/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
R046	1-218-877-11	METAL CHIP	18K	0.5%	1/16W (TR818/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
R047	1-216-845-11	METAL CHIP	100K	5%	1/16W (TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
R048	1-216-845-11	METAL CHIP	100K	5%	1/16W (TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
R049	1-216-864-91	SHORT	0		(TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
R050	1-218-903-11	METAL CHIP	220K	0.5%	1/16W (TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)

Ref. No.	Part No.	Description			Remarks
R051	1-218-891-11	METAL CHIP	68K	0.5%	1/16W (TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
R052	1-216-801-11	METAL CHIP	22	5%	1/16W
R071	1-216-857-11	METAL CHIP	1M	5%	1/16W (TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
R072	1-216-857-11	METAL CHIP	1M	5%	1/16W (TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
R073	1-216-864-11	METAL CHIP	1	5%	1/16W (TR818)
R073	1-216-864-91	SHORT	0		(TR618/TR618E/TR718E/TR728E)
R074	1-218-446-11	METAL CHIP	1	5%	1/16W (TR818)
R101	1-216-804-11	METAL CHIP	39	5%	1/16W (TR618E/TR718E/TR728E/TRV49E/TRV58E/TRV59E/TRV78E/TRV98E)
R101	1-216-806-11	RES-CHIP	56	5%	1/16W (TR618/TRV818/TRV49/TRV58/TRV68/TRV78/TRV88/TRV98)
R102	1-216-818-11	METAL CHIP	560	5%	1/16W
R105	1-216-809-11	METAL CHIP	100	5%	1/16W
R106	1-216-838-11	METAL CHIP	27K	5%	1/16W
R107	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R108	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R109	1-216-838-11	METAL CHIP	27K	5%	1/16W
R110	1-216-813-11	METAL CHIP	220	5%	1/16W
R111	1-216-813-11	METAL CHIP	220	5%	1/16W
R112	1-216-814-11	METAL CHIP	270	5%	1/16W
R113	1-216-813-11	METAL CHIP	220	5%	1/16W
R115	1-216-839-11	METAL CHIP	33K	5%	1/16W
R116	1-216-826-11	METAL CHIP	2.7K	5%	1/16W
R117	1-216-826-11	METAL CHIP	2.7K	5%	1/16W
R118	1-218-899-11	METAL CHIP	150K	0.5%	1/16W
R120	1-216-837-11	METAL CHIP	22K	5%	1/16W
R121	1-216-853-11	METAL CHIP	470K	5%	1/16W
R122	1-216-853-11	METAL CHIP	470K	5%	1/16W
R123	1-216-837-11	METAL CHIP	22K	5%	1/16W
R124	1-216-838-11	METAL CHIP	27K	5%	1/16W
R154	1-216-833-11	METAL CHIP	10K	5%	1/16W
R155	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R156	1-216-825-11	METAL CHIP	2.2K	5%	1/16W (TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
R157	1-216-825-11	METAL CHIP	2.2K	5%	1/16W (TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
R158	1-216-825-11	METAL CHIP	2.2K	5%	1/16W (TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV88/TRV98)
R160	1-216-825-11	METAL CHIP	2.2K	5%	1/16W (EXCEPT TR818)
R165	1-216-864-91	SHORT	0		(TR818)
R166	1-216-864-91	SHORT	0		(TR818)
R167	1-216-864-91	SHORT	0		(TR818)
R168	1-216-830-11	METAL CHIP	5.6K	5%	1/16W
R169	1-216-821-11	METAL CHIP	1K	5%	1/16W
R170	1-216-831-11	METAL CHIP	6.8K	5%	1/16W

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Ref. No.	Part No.	Description			Remarks
R171	1-216-817-11	METAL CHIP	470	5%	1/16W
R172	1-216-809-11	METAL CHIP	100	5%	1/16W
R173	1-216-840-11	METAL CHIP	39K	5%	1/16W
R174	1-216-820-11	METAL CHIP	820	5%	1/16W
R175	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R176	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R177	1-216-834-11	METAL CHIP	12K	5%	1/16W
R178	1-216-817-11	METAL CHIP	470	5%	1/16W
R179	1-216-813-11	METAL CHIP	220	5%	1/16W
R180	1-216-830-11	METAL CHIP	5.6K	5%	1/16W
R181	1-216-834-11	METAL CHIP	12K	5%	1/16W (TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
R182	1-216-814-11	METAL CHIP	270	5%	1/16W (TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
R183	1-216-814-11	METAL CHIP	270	5%	1/16W (TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
R184	1-216-834-11	METAL CHIP	12K	5%	1/16W (TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
R185	1-216-834-11	METAL CHIP	12K	5%	1/16W (TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
R186	1-216-814-11	METAL CHIP	270	5%	1/16W (TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
R187	1-216-814-11	METAL CHIP	270	5%	1/16W (TR818)
R188	1-216-834-11	METAL CHIP	12K	5%	1/16W
R189	1-216-833-11	METAL CHIP	10K	5%	1/16W (EXCEPT TR818)
R189	1-216-834-11	METAL CHIP	12K	5%	1/16W (TR818)
R190	1-216-814-11	METAL CHIP	270	5%	1/16W (TR818)
R190	1-216-817-11	METAL CHIP	470	5%	1/16W (EXCEPT TR818)
R191	1-216-814-11	METAL CHIP	270	5%	1/16W (TR818)
R192	1-216-834-11	METAL CHIP	12K	5%	1/16W
R193	1-216-857-11	METAL CHIP	1M	5%	1/16W
R195	1-216-835-11	METAL CHIP	15K	5%	1/16W
R196	1-216-835-11	METAL CHIP	15K	5%	1/16W
R197	1-216-834-11	METAL CHIP	12K	5%	1/16W
R198	1-216-817-11	METAL CHIP	470	5%	1/16W
R199	1-216-821-11	METAL CHIP	1K	5%	1/16W
R200	1-216-833-11	METAL CHIP	10K	5%	1/16W
R204	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R208	1-216-864-91	SHORT	0		
R216	1-216-807-11	METAL CHIP	68	5%	1/16W
R226	1-216-864-91	SHORT	0		
R229	1-216-807-11	METAL CHIP	68	5%	1/16W
R232	1-218-879-11	METAL CHIP	22K	0.5%	1/16W
R271	1-216-845-11	METAL CHIP	100K	5%	1/16W (TR618/TR618E/TR718E/TR728E/TRV49/TRV49E/TRV58/TRV58E/TRV59E)
R274	1-216-845-11	METAL CHIP	100K	5%	1/16W
R275	1-216-864-91	SHORT	0		(TR818/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
R280	1-216-857-11	METAL CHIP	1M	5%	1/16W
R281	1-216-853-11	METAL CHIP	470K	5%	1/16W
R301	1-216-841-11	METAL CHIP	47K	5%	1/16W
R302	1-216-821-11	METAL CHIP	1K	5%	1/16W
R304	1-216-821-11	METAL CHIP	1K	5%	1/16W
R306	1-216-797-11	METAL CHIP	10	5%	1/16W
R307	1-216-857-11	METAL CHIP	1M	5%	1/16W
R308	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R309	1-216-833-11	METAL CHIP	10K	5%	1/16W
R310	1-216-849-11	METAL CHIP	220K	5%	1/16W
R311	1-216-853-11	METAL CHIP	470K	5%	1/16W
R312	1-216-853-11	METAL CHIP	470K	5%	1/16W
R313	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R314	1-216-835-11	METAL CHIP	15K	5%	1/16W
R316	1-216-853-11	METAL CHIP	470K	5%	1/16W
R317	1-216-821-11	METAL CHIP	1K	5%	1/16W
R318	1-216-821-11	METAL CHIP	1K	5%	1/16W
R319	1-216-815-11	METAL CHIP	330	5%	1/16W
R321	1-216-821-11	METAL CHIP	1K	5%	1/16W
R322	1-216-833-11	METAL CHIP	10K	5%	1/16W
R323	1-216-841-11	METAL CHIP	47K	5%	1/16W
R351	1-216-821-11	METAL CHIP	1K	5%	1/16W
R353	1-216-864-91	SHORT	0		(TR818/TR618/TR618E/TR718E/TR728E)
R354	1-216-809-11	METAL CHIP	100	5%	1/16W (TR818/TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
R356	1-216-864-91	SHORT	0		(TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
R358	1-216-833-11	METAL CHIP	10K	5%	1/16W (TR818/TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
R363	1-216-832-11	METAL CHIP	8.2K	5%	1/16W (TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
R364	1-216-845-11	METAL CHIP	100K	5%	1/16W (TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
R368	1-216-847-11	METAL CHIP	150K	5%	1/16W
R372	1-216-841-11	METAL CHIP	47K	5%	1/16W
R373	1-216-853-11	METAL CHIP	470K	5%	1/16W
R379	1-216-820-11	METAL CHIP	820	5%	1/16W
R382	1-216-841-11	METAL CHIP	47K	5%	1/16W
R401	1-216-821-11	METAL CHIP	1K	5%	1/16W
R402	1-216-854-11	METAL CHIP	560K	5%	1/16W
R403	1-216-845-11	METAL CHIP	100K	5%	1/16W
R404	1-216-845-11	METAL CHIP	100K	5%	1/16W
R408	1-216-845-11	METAL CHIP	100K	5%	1/16W
R411	1-216-845-11	METAL CHIP	100K	5%	1/16W
R417	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R420	1-216-841-11	METAL CHIP	47K	5%	1/16W
R428	1-216-845-11	METAL CHIP	100K	5%	1/16W
R431	1-218-881-11	METAL CHIP	27K	0.5%	1/16W
R432	1-218-895-11	METAL CHIP	100K	0.5%	1/16W
R433	1-216-845-11	METAL CHIP	100K	5%	1/16W
R434	1-216-864-91	SHORT	0		
R451	1-216-841-11	METAL CHIP	47K	5%	1/16W
R452	1-216-851-11	METAL CHIP	330K	5%	1/16W
R455	1-216-845-11	METAL CHIP	100K	5%	1/16W
R457	1-216-817-11	METAL CHIP	470	5%	1/16W

Ref. No.	Part No.	Description				Remarks
R458	1-217-671-11	METAL CHIP	1	5%	1/10W	
R459	1-217-671-11	METAL CHIP	1	5%	1/10W	
R460	1-217-671-11	METAL CHIP	1	5%	1/10W	
R461	1-216-812-11	METAL CHIP	180	5%	1/16W	
R462	1-216-811-11	METAL CHIP	150	5%	1/16W	
R464	1-216-817-11	METAL CHIP	470	5%	1/16W	
R465	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R466	1-216-833-11	METAL CHIP	10K	5%	1/16W	(TR618E/TR718E/TR728E/TRV49E/TRV58E/TRV59E/TRV78E/TRV98E)
R466	1-216-864-91	SHORT	0			(TR618/TR818/TRV49/TRV58/TRV68/TRV78/TRV88/TRV98)
R467	1-216-835-11	METAL CHIP	15K	5%	1/16W	(TR618/TR818/TRV49/TRV58/TRV68/TRV78/TRV88/TRV98)
R467	1-216-841-11	METAL CHIP	47K	5%	1/16W	(TR618E/TR718E/TR728E/TRV49E/TRV58E/TRV59E/TRV78E/TRV98E)
R468	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R469	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R470	1-216-833-11	METAL CHIP	10K	5%	1/16W	(TR618E/TR718E/TR728E/TRV49E/TRV58E/TRV59E/TRV78E/TRV98E)
R470	1-216-864-91	SHORT	0			(TR618/TR818/TRV49/TRV58/TRV68/TRV78/TRV88/TRV98)
R471	1-218-446-11	METAL CHIP	1	5%	1/16W	
R472	1-218-446-11	METAL CHIP	1	5%	1/16W	
R474	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R480	1-216-835-11	METAL CHIP	15K	5%	1/16W	(TR618/TR818/TRV49/TRV58/TRV68/TRV78/TRV88/TRV98)
R480	1-216-841-11	METAL CHIP	47K	5%	1/16W	(TR618E/TR718E/TR728E/TRV49E/TRV58E/TRV59E/TRV78E/TRV98E)
R481	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R501	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R502	1-216-864-91	SHORT	0			
R504	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R513	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R516	1-216-857-11	METAL CHIP	1M	5%	1/16W	(TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
R519	1-218-903-11	METAL CHIP	220K	0.5%	1/16W	
R520	1-218-911-11	METAL CHIP	470K	0.5%	1/16W	
R521	1-218-911-11	METAL CHIP	470K	0.5%	1/16W	
R525	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R531	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R542	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R543	1-216-854-11	METAL CHIP	560K	5%	1/16W	
R544	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R547	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R552	1-219-570-11	RES-CHIP	10M	5%	1/16W	
R554	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R558	1-216-817-11	METAL CHIP	470	5%	1/16W	
R559	1-216-803-11	METAL CHIP	33	5%	1/16W	
R611	1-216-833-11	METAL CHIP	10K	5%	1/16W	(TR618/TR818/TRV68/TRV78/TRV88/TRV98)
R611	1-216-837-11	METAL CHIP	22K	5%	1/16W	(TRV49/TRV58)
R611	1-216-845-11	METAL CHIP	100K	5%	1/16W	(TRV49E/TRV58E/TRV59E)
R612	1-216-833-11	METAL CHIP	10K	5%	1/16W	(TR618E/TR718E/TR728E/TRV78E/TRV98E)
R612	1-216-837-11	METAL CHIP	22K	5%	1/16W	(TRV49E/TRV58E/TRV59E)
R612	1-216-845-11	METAL CHIP	100K	5%	1/16W	(TRV49/TRV58)

Ref. No.	Part No.	Description				Remarks
R613	1-216-833-11	METAL CHIP	10K	5%	1/16W	(TR618/TR618E/TR718E/TR728E)
R613	1-216-837-11	METAL CHIP	22K	5%	1/16W	(TR818/TRV78E/TRV98E)
R613	1-216-845-11	METAL CHIP	100K	5%	1/16W	(TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV88/TRV98)
R614	1-216-837-11	METAL CHIP	22K	5%	1/16W	(TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
R614	1-216-845-11	METAL CHIP	100K	5%	1/16W	(TR818)
R701	1-216-821-11	METAL CHIP	1K	5%	1/16W	(EXCEPT TR818)
R702	1-216-813-11	METAL CHIP	220	5%	1/16W	(EXCEPT TR818)
R703	1-216-845-11	METAL CHIP	100K	5%	1/16W	(EXCEPT TR818)
R704	1-216-795-11	RES-CHIP	6.8	5%	1/16W	
R705	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R706	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R707	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R708	1-216-795-11	RES-CHIP	6.8	5%	1/16W	
R709	1-216-821-11	METAL CHIP	1K	5%	1/16W	(TR818)
R710	1-216-821-11	METAL CHIP	1K	5%	1/16W	(TR818)
R711	1-216-813-11	METAL CHIP	220	5%	1/16W	(TRV68/TRV78/TRV88/TRV98)
R712	1-216-813-11	METAL CHIP	220	5%	1/16W	(TRV68/TRV78/TRV88/TRV98)
R713	1-216-813-11	METAL CHIP	220	5%	1/16W	(TR818/TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
R916	1-218-881-11	METAL CHIP	27K	0.5%	1/16W	
R917	1-218-893-11	METAL CHIP	82K	0.5%	1/16W	

< COMPOSITION CIRCUIT BLOCK >

Ref. No.	Part No.	Description	Remarks
RB101	1-239-702-81	RESISTOR, NETWORK 22K	
RB102	1-239-698-11	RESISTOR, NETWORK 10K	
RB151	1-239-698-11	RESISTOR, NETWORK 10K	
RB221	1-239-686-11	RESISTOR, NETWORK 1K	
RB222	1-239-686-11	RESISTOR, NETWORK 1K	
RB223	1-239-672-81	RESISTOR, NETWORK 68	
RB272	1-234-380-21	RES, NETWORK 47KX4 (1005)	
RB273	1-234-372-21	RES, NETWORK 100X4 (1005)	
RB301	1-239-708-81	RESISTOR, NETWORK 68K	
RB302	1-239-702-81	RESISTOR, NETWORK 22K	
RB351	1-239-698-11	RESISTOR, NETWORK 10K	(TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
RB352	1-239-706-81	RESISTOR, NETWORK 47K	(TRV49/TRV49E/TRV58/TRV58E/TRV59E/TRV68/TRV78/TRV78E/TRV88/TRV98/TRV98E)
RB401	1-234-381-21	RES, NETWORK 100KX4 (1005)	
RB402	1-239-694-81	RESISTOR, NETWORK 4.7K	
RB406	1-239-698-11	RESISTOR, NETWORK 10K	
RB407	1-239-690-81	RESISTOR, NETWORK 2.2K	
RB451	1-234-381-21	RES, NETWORK 100KX4 (1005)	
RB452	1-239-698-11	RESISTOR, NETWORK 10K	
RB501	1-234-375-21	RES, NETWORK 1KX4 (1005)	
RB502	1-234-383-21	RES, NETWORK 470KX4 (1005)	

Ref. No.	Part No.	Description	Remarks
RB503	1-234-383-21	RES, NETWORK 470KX4 (1005)	
RB504	1-234-375-21	RES, NETWORK 1KX4 (1005)	
RB505	1-239-686-11	RESISTOR, NETWORK 1K	
RB506	1-234-378-21	RES, NETWORK 10KX4 (1005)	(TR618/TR618E/TR718E/TR728E/TR818)
RB508	1-239-686-11	RESISTOR, NETWORK 1K	
RB509	1-239-657-81	RESISTOR, NETWORK 470K	
RB510	1-234-375-21	RES, NETWORK 1KX4 (1005)	
RB511	1-234-383-21	RES, NETWORK 470KX4 (1005)	
RB514	1-239-706-81	RESISTOR, NETWORK 47K	
		< TRANSFORMER >	
T001	1-435-252-11	TRANSFORMER, DC-DC CONVERTER	
		< VARISTOR >	
VDR701	1-803-974-21	VARISTOR, CHIP	
VDR703	1-803-974-21	VARISTOR, CHIP	
VDR704	1-803-974-21	VARISTOR, CHIP	
VDR706	1-803-974-21	VARISTOR, CHIP	
VDR707	1-803-974-21	VARISTOR, CHIP	
		< VIBRATOR >	
X271	1-760-320-11	VIBRATOR, CRYSTAL (28.636363MHz)	(TR618/TR818/TRV49/TRV58/TRV68/TRV78/TRV88/TRV98)
X271	1-760-321-11	VIBRATOR, CRYSTAL (28.375MHz)	(TR618E/TR718E/TR728E/TRV49E/TRV58E/TRV59E/TRV78E/TRV98E)
X401	1-760-655-41	VIBRATOR, CRYSTAL (20MHz)	
X501	1-767-980-21	VIBRATOR, CERAMIC (20MHz)	
X502	1-760-458-21	VIBRATOR, CRYSTAL (32.768kHz)	

A-7073-838-A VF-129 (N) BOARD, COMPLETE (EXCEPT TR818)

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(Ref.No.;1000 Series)

Ref. No.	Part No.	Description	Remarks
		< CAPACITOR >	
C901	1-107-854-11	TANTAL. CHIP 68uF 20%	6.3V
C902	1-163-038-11	CERAMIC CHIP 0.1uF	25V
C903	1-135-145-11	TANTALUM CHIP 0.47uF 10%	35V
C904	1-162-965-11	CERAMIC CHIP 0.0015uF 10%	50V
C905	1-104-752-11	TANTAL. CHIP 33uF 20%	6.3V
C906	1-162-638-11	CERAMIC CHIP 1uF	16V
C907	1-104-563-11	FILM CHIP 0.1uF 5%	16V
C908	1-162-920-11	CERAMIC CHIP 27PF 5%	50V
C909	1-163-009-11	CERAMIC CHIP 0.001uF 10%	50V
⚠C910	1-162-625-11	CERAMIC CHIP 0.0047uF 5%	50V
⚠C911	1-164-715-11	CERAMIC CHIP 0.0068uF 5%	50V
C912	1-107-854-11	TANTAL. CHIP 68uF 20%	6.3V
C913	1-135-145-11	TANTALUM CHIP 0.47uF 10%	35V
C914	1-113-984-11	TANTAL. CHIP 1.5uF 20%	35V
C915	1-163-037-11	CERAMIC CHIP 0.022uF 10%	25V
C916	1-135-475-91	CERAMIC CHIP 0.001uF 10%	630V
		< CONNECTOR >	
* CN901	1-785-379-01	CONNECTOR, FFC/FPC 4P	
* CN902	1-580-057-11	PIN, CONNECTOR (SMD) 4P	
		< DIODE >	
D901	8-719-951-21	DIODE PR1102W-TR	
D903	8-719-073-01	DIODE MA111-(K8).S0	
		< IC >	
IC901	8-759-196-14	IC BA7149F-E2	
		< COIL >	
L901	1-412-031-11	INDUCTOR CHIP 47uH	
L902	1-410-387-11	INDUCTOR CHIP 33uH	
⚠L903	1-411-697-11	COIL, FERRITE (HLC)	
		< TRANSISTOR >	
Q901	8-729-230-63	TRANSISTOR 2SD1819A-QRS-TX	
Q902	8-729-106-68	TRANSISTOR 2SD1615-T1GLGK	
Q903	8-729-216-31	TRANSISTOR 2SA1163G-TE85L	
Q904	8-729-230-63	TRANSISTOR 2SD1819A-QRS-TX	
		< RESISTOR >	
R901	1-216-817-11	METAL CHIP 470 5%	1/16W
R902	1-216-817-11	METAL CHIP 470 5%	1/16W
R903	1-216-055-00	METAL CHIP 1.8K 5%	1/10W
R904	1-216-833-11	METAL CHIP 10K 5%	1/16W
R905	1-216-822-11	METAL CHIP 1.2K 5%	1/16W
R906	1-216-823-11	METAL CHIP 1.5K 5%	1/16W
R907	1-216-845-11	METAL CHIP 100K 5%	1/16W
R908	1-216-852-11	METAL CHIP 390K 5%	1/16W
R909	1-216-833-11	METAL CHIP 10K 5%	1/16W
R910	1-216-835-11	METAL CHIP 15K 5%	1/16W
R911	1-216-160-00	RES-CHIP 27 5%	1/8W
R912	1-216-857-11	METAL CHIP 1M 5%	1/16W
R915	1-218-879-11	METAL CHIP 22K 0.5%	1/16W
R917	1-218-891-11	METAL CHIP 68K 0.5%	1/16W
R918	1-216-829-11	METAL CHIP 4.7K 5%	1/16W
R919	1-216-843-11	METAL CHIP 68K 5%	1/16W
R920	1-216-837-11	METAL CHIP 22K 5%	1/16W
R921	1-216-795-11	RES-CHIP 6.8 5%	1/16W
R921	1-216-800-11	RES-CHIP 18 5%	1/16W
R922	1-216-850-11	METAL CHIP 270K 5%	1/16W
R923	1-216-857-11	METAL CHIP 1M 5%	1/16W
R924	1-216-862-11	RES-CHIP 2.7M 5%	1/16W
R925	1-216-862-11	RES-CHIP 2.7M 5%	1/16W
R926	1-216-821-11	METAL CHIP 1K 5%	1/16W
R927	1-216-821-11	METAL CHIP 1K 5%	1/16W
R928	1-216-827-11	METAL CHIP 3.3K 5%	1/16W
R929	1-216-821-11	METAL CHIP 1K 5%	1/16W
R930	1-216-791-11	METAL CHIP 3.3 5%	1/16W
R931	1-217-671-11	METAL CHIP 1 5%	1/10W
R932	1-216-829-11	METAL CHIP 4.7K 5%	1/16W
		< VARIABLE RESISTOR >	
RV903	1-238-852-11	RES, ADJ, CERMET 470	
RV904	1-238-095-11	RES, ADJ, CERMET 470K	

Note :	Note :
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

< TRANSFORMER >

Ref. No.	Part No.	Description	Remarks
⚠T901	1-453-124-11	TRANSFORMER ASSY, FLYBACK	
T902	1-431-915-11	TRANSFORMER ASSY, FLYBACK (M)	

< FLAT CABLE >

Ref. No.	Part No.	Description	Remarks
⚠W901	1-540-019-21	SOCKET ASSY, CRT	

A-7074-193-A VF-141 BOARD, COMPLETE (TR818)
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(Ref.No.;10000 Series)

< CAPACITOR >

Ref. No.	Part No.	Description			Remarks
C4501	1-127-688-21	TANTAL. CHIP	10uF	20%	6.3V
C4501	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C4503	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C4504	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C4507	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C4508	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C4509	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C4510	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C4511	1-164-739-11	CERAMIC CHIP	560PF	5%	50V
C4512	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C4513	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C4514	1-107-687-11	TANTAL. CHIP	3.3uF	20%	20V
C4515	1-164-357-11	CERAMIC CHIP	0.001uF	5%	50V
C4516	1-162-928-11	CERAMIC CHIP	120PF	5%	50V
C4517	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C4518	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C4519	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C4520	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C4521	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C4523	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C4524	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C4526	1-107-726-11	CERAMIC CHIP	0.01uF	10%	25V
C4527	1-107-725-11	CERAMIC CHIP	0.1uF	10%	16V

< CONNECTOR >

Ref. No.	Part No.	Description	Remarks
CN4501	1-764-526-11	CONNECTOR, FFC/FPC 18P	
CN4502	1-750-630-11	CONNECTOR, FFC/FPC (ZIF) 16P	

< DIODE >

Ref. No.	Part No.	Description	Remarks
D4502	8-713-102-80	DIODE 1T369-01-T8A	
D4503	8-719-077-74	DIODE MA2S784008S0	
D4504	8-719-077-74	DIODE MA2S784008S0	

< FERRITE BEAD >

Ref. No.	Part No.	Description		Remarks
FB4502	1-500-329-21	FERRITE	0UH	
FB4505	1-500-329-21	FERRITE	0UH	

< IC >

Ref. No.	Part No.	Description	Remarks
IC4501	8-759-660-93	IC RB5P004AM1	
IC4502	8-752-405-57	IC CXD3501AR-T4	

< COIL >

Ref. No.	Part No.	Description		Remarks
L4501	1-469-525-91	INDUCTOR	10uH	
L4504	1-412-949-21	INDUCTOR	6.8uH	

< TRANSISTOR >

Ref. No.	Part No.	Description		Remarks
Q4504	8-729-037-52	TRANSISTOR	2SD2216J-QR(K8).SO	

< RESISTOR >

Ref. No.	Part No.	Description			Remarks
R4505	1-216-853-11	METAL CHIP	470K	5%	1/16W
R4507	1-218-895-11	METAL CHIP	100K	0.5%	1/16W
R4508	1-216-845-11	METAL CHIP	100K	5%	1/16W
R4513	1-216-835-11	METAL CHIP	15K	5%	1/16W
R4515	1-216-826-11	METAL CHIP	2.7K	5%	1/16W
R4516	1-216-841-11	METAL CHIP	47K	5%	1/16W
R4517	1-216-843-11	METAL CHIP	68K	5%	1/16W
R4518	1-216-837-11	METAL CHIP	22K	5%	1/16W
R4520	1-216-843-11	METAL CHIP	68K	5%	1/16W
R4521	1-216-857-11	METAL CHIP	1M	5%	1/16W
R4522	1-216-845-11	METAL CHIP	100K	5%	1/16W
R4523	1-216-845-11	METAL CHIP	100K	5%	1/16W
R4524	1-216-844-11	METAL CHIP	82K	5%	1/16W
R4525	1-216-838-11	METAL CHIP	27K	5%	1/16W
R4526	1-216-809-11	METAL CHIP	100	5%	1/16W
R4527	1-216-809-11	METAL CHIP	100	5%	1/16W
R4528	1-216-809-11	METAL CHIP	100	5%	1/16W
R4529	1-216-833-11	METAL CHIP	10K	5%	1/16W
R4530	1-216-845-11	METAL CHIP	100K	5%	1/16W
R4534	1-216-864-91	SHORT	0		
R4542	1-216-864-91	SHORT	0		
R4544	1-216-853-11	METAL CHIP	470K	5%	1/16W
R4545	1-216-845-11	METAL CHIP	100K	5%	1/16W
R4546	1-216-845-11	METAL CHIP	100K	5%	1/16W
R4547	1-216-845-11	METAL CHIP	100K	5%	1/16W

ACCESSORIES
****

Ref. No.	Part No.	Description	Remarks
	1-467-574-21	REMOTE COMMANDER (RMT-708) (TR728E/TRV49/TRV49E/TRV59E/TRV78/TRV78E/TRV98/TRV98E)	
	1-467-574-73	REMOTE COMMANDER (RMT-708) (TRV49E:E/TRV78E:E/TRV98E:E)	
⚠	1-475-599-11	ADAPTOR, AC (AC-L10A) (TR618/TR618E:E,HK,AUS/TR718E:AEP,UK/TR728E:AEP,UK/TR818/TRV49:E,HK,JE/TRV49E:E,HK,AUS,JE/TRV58/TRV58E/TRV59E/TRV68/TRV78:E,HK,JE/TRV78E/TRV88/TRV98:US,CND,E,HK,JE,BR/TRV98E:AEP,UK,E,HK,AUS,JE)	
⚠	1-475-599-71	ADAPTOR, AC (AC-L10A) (TRV49:KR/TRV78:KR/TRV98:KR)	
⚠	1-475-599-81	ADAPTOR, AC (AC-L10B) (TR618E:CN/TRV49E:CN/TRV98E:CN)	

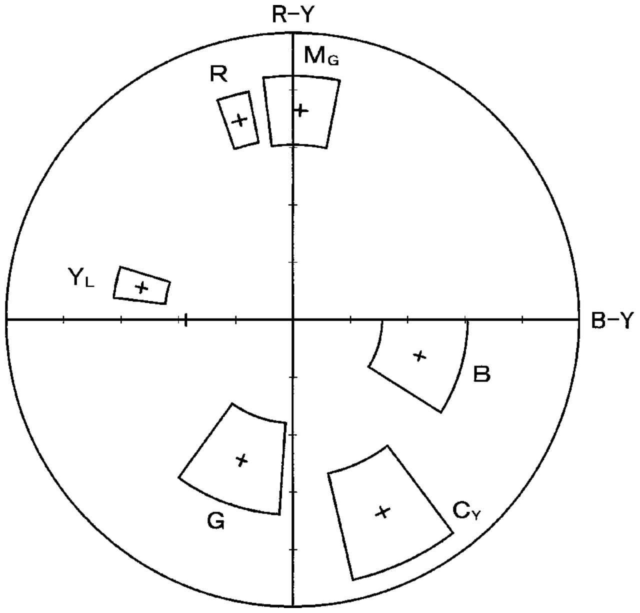
Note :	Note :
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remarks
⚠	1-569-007-11	ADAPTOR, CONVERSION 2P	(TRV49:JE/TRV49E:JE/TRV78:JE/TRV78E:JE/TRV98:JE/TRV98E:JE)
⚠	1-569-008-21	ADAPTOR, CONVERSION 2P	(TR618/TR618E:E,HK/TR818:E,BR/TRV49:E,HK/TRV49E:E,HK/TRV58:E,BR/TRV68:E/TRV78:E,HK/TRV78E:E,HK/TRV88:E/TRV98:E,HK/TRV98E:E,HK)
	1-573-291-11	ADAPTOR, CONVERSION 21P	(TR718E/TR728E/TRV58E/TRV59E/TRV78E:AEP,UK/TRV98E:AEP,UK)
* ⚠	1-575-131-11	CORD, POWER	(TR818:E,BR/TRV49:E/TRV49E:E/TRV58:E,BR/TRV68:E/TRV78:E/TRV78E:E/TRV88:E/TRV98:E,BR/TRV98E:E)
⚠	1-690-827-11	CORD SET, POWER	(TR718E:AEP/TR728E:AEP/TRV58E:AEP/TRV59E:AEP/TRV78E:AEP/TRV98E:AEP)
⚠	1-696-819-11	CORD, POWER	(TR618E:AUS/TRV49E:AUS/TRV78E:AUS/TRV98E:AUS)
⚠	1-769-608-11	CORD, POWER	(TR618/TR618E:E/TR818:E/TRV49:E/TRV49E:E/TRV58:E/TRV68:E/TRV78:E/TRV78E:E/TRV88:E/TRV98:E/TRV98E:E)
⚠	1-775-843-21	CORD, POWER (WITH FILTER)	(TR718E:UK/TR728E:UK/TRV58E:UK/TRV59E:UK/TRV78E:UK/TRV98E:UK)
⚠	1-776-985-11	CORD, POWER	(TRV49:KR/TRV78:KR/TRV98:KR)
⚠	1-782-476-11	CORD, POWER	(TR618E:CN/TRV49E:CN/TRV98E:CN)
⚠	1-783-374-11	CORD, POWER	(TR618E:HK/TRV49:HK/TRV49E:HK/TRV78:HK/TRV78E:HK/TRV98:HK/TRV98E:HK)
⚠	1-783-952-11	CORD, POWER	(TR818:AR/TRV58:AR)
	1-783-738-31	CORD, CONNECTION (AV CABLE)(1.5m)	
⚠	1-790-107-22	CORD, POWER	(TR818:US,CND/TRV58:US,CND/TRV68:US,CND/TRV88:US/TRV98:US,CND)
⚠	1-790-732-11	CORD, POWER	(TRV49:JE/TRV49E:JE/TRV78:JE/TRV78E:JE/TRV98:JE/TRV98E:JE)
	3-065-645-11	MANUAL, INSTRUCTION (ENGLISH)	(TR618/TR818:US,CND)
	3-065-645-21	MANUAL, INSTRUCTION (FRENCH)	(TR818:CND)
	3-065-645-31	MANUAL, INSTRUCTION (SRANISH/PORTUGUESE)	(TR618/TR818:E,AR)
	3-065-645-41	MANUAL, INSTRUCTION (TRANDTIONAL CHINESE)	(TR618)
	3-065-645-61	MANUAL, INSTRUCTION (ARABIC)	(TR618)
	3-065-646-11	MANUAL, INSTRUCTION (ENGLISH/RUSSIAN)	(TR618E/TR718E:AEP/TR728E:AEP)
	3-065-646-21	MANUAL, INSTRUCTION (FRENCH/GERMAN)	(TR618E:E/TR718E:AEP/TR728E:AEP)
	3-065-646-31	MANUAL, INSTRUCTION (ENGLISH/DUTCH)	(TR718E:AEP/TR728E:AEP)
	3-065-646-41	MANUAL, INSTRUCTION (SPANISH/PORTUGUESE)	(TR718E:AEP/TR728E:AEP)
	3-065-646-51	MANUAL, INSTRUCTION (ITALIAN/GREEK)	(TR718E:AEP/TR728E:AEP)
	3-065-646-61	MANUAL, INSTRUCTION (ENGLISH/SWEDISH)	(TR718E:AEP/TR728E:AEP)
	3-065-646-71	MANUAL, INSTRUCTION (FINNISH/DANISH)	(TR718E:AEP/TR728E:AEP)
	3-065-646-81	MANUAL, INSTRUCTION (POLISH/CZECH)	(TR718E:AEP/TR728E:AEP)
	3-065-646-91	MANUAL, INSTRUCTION (SLOVAKIAN)	(TR718E:AEP/TR728E:AEP)
	3-065-647-11	MANUAL, INSTRUCTION (ARABIC/PERSIAN)	(TR618E:E)
	3-065-647-21	MANUAL, INSTRUCTION (SIMPLIFIED CHINESE)	(TR618E:E,CN)
	3-065-647-31	MANUAL, INSTRUCTION (TRADITIONAL CHINESE)	(TR618E:HK)
	3-065-648-11	MANUAL, INSTRUCTION (ENGLISH)	(TRV49:E,HK,JE/TRV58/TRV68/TRV78:E,HK,JE/TRV88/TRV98:US,CND,E,HK,JE)
	3-065-648-21	MANUAL, INSTRUCTION (FRENCH)	(TRV58:CND/TRV68:CND/TRV98:CND)
	3-065-648-31	MANUAL, INSTRUCTION (SPANISH/PORTUGUESE)	(TRV49:E,JE/TRV58:E,AR/TRV68:E/TRV78:E,JE/TRV88:E/TRV98:E,JE)
	3-065-648-41	MANUAL, INSTRUCTION (TRADITIONAL CHINESE)	(TRV49:E,HK/TRV78:E,HK/TRV98:E,HK)
	3-065-648-51	MANUAL, INSTRUCTION (KOREAN)	(TRV49:KR,JE/TRV78:KR,JE/TRV98:KR,JE)
	3-065-648-61	MANUAL, INSTRUCTION (ARABIC)	(TRV49:E/TRV78:E/TRV98:E)
	3-065-649-11	MANUAL, INSTRUCTION (ENGLISH/RUSSIAN)	(TRV49E/TRV58E:AEP/TRV59E:AEP/TRV78E:AEP,E,HK,AUS,JE/TRV98E:AEP,E,HK,AUS,JE,CN)
	3-065-649-21	MANUAL, INSTRUCTION (FRENCH/GERMAN)	(TRV49E:E,JE/TRV58E:AEP/TRV59E:AEP/TRV78E:AEP,E,JE/TRV98E:AEP,E,JE)
	3-065-649-31	MANUAL, INSTRUCTION (ENGLISH/DUTCH)	(TRV58E:AEP/TRV59E:AEP/TRV78E:AEP/TRV98E:AEP)
	3-065-649-41	MANUAL, INSTRUCTION (SPANISH/PORTUGUESE)	(TRV58E:AEP/TRV59E:AEP/TRV78E:AEP/TRV98E:AEP)
	3-065-649-51	MANUAL, INSTRUCTION (ITALIAN/GREEK)	(TRV58E:AEP/TRV59E:AEP1/TRV78E:AEP/TRV98E:AEP)
	3-065-649-61	MANUAL, INSTRUCTION (EHGLISH/SWEDISH)	(TRV58E:AEP/TRV59E:AEP/TRV78E:AEP/TRV98E:AEP)
	3-065-649-71	MANUAL, INSTRUCTION (FINNISH/DANISH)	(TRV58E:AEP/TRV59E:AEP/TRV78E:AEP/TRV98E:AEP)
	3-065-649-81	MANUAL, INSTRUCTION (POLISH/CZECH)	(TRV58E:AEP/TRV59E:AEP/TRV78E:AEP/TRV98E:AEP)
	3-065-649-91	MANUAL, INSTRUCTION (SLOVSAKIAN/HUNGARIAN)	(TRV58E:AEP/TRV59E:AEP/TRV78E:AEP/TRV98E:AEP)
	3-065-650-11	MANUAL, INSTRUCTION (ARABIC/PERSIAN)	(TRV49E:E/TRV78E:E/TRV98E:E)
	3-065-650-21	MANUAL, INSTRUCTION (SIMPLIFIED CHINESE)	(TRV49E:E,JE,CN/TRV78E:E,JE/TRV98E:E,JE,CN)
	3-065-650-31	MANUAL, INSTRUCTION (TRANDTIONAL CHINESE)	(TRV49E:HK/TRV78E:HK/TRV98E:HK)
	3-958-131-01	LID,BATTERY CASE (FOR RMT-708)	

Note :	**Note :**
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

〈FOR CAMERA COLOR REPRODUCTION ADJUSTMENT〉

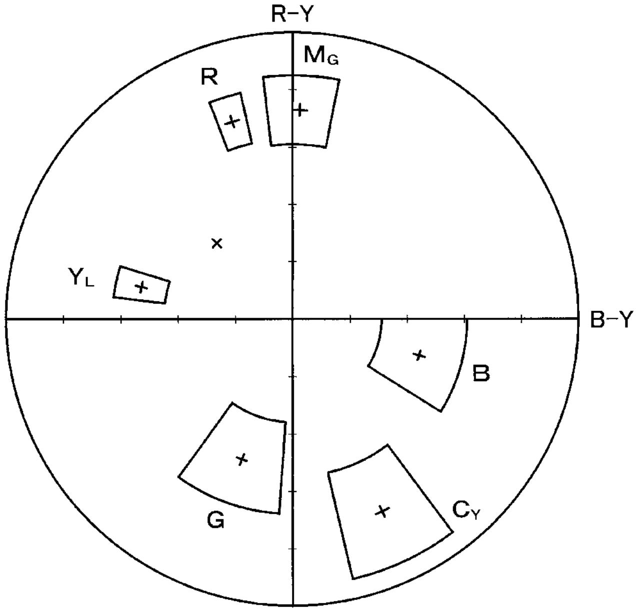
For NTSC model


R-Y
MG
R
YL
B-Y
B
G
CY

CCD-TR618/TR818/TRV49/TRV58/
TRV68/TRV78/TRV88/TRV98

Take a copy of CAMERA COLOR REPRODUCTION FRAME with a clear sheet for use.

For PAL model


R-Y
MG
R
YL
B-Y
B
G
CY

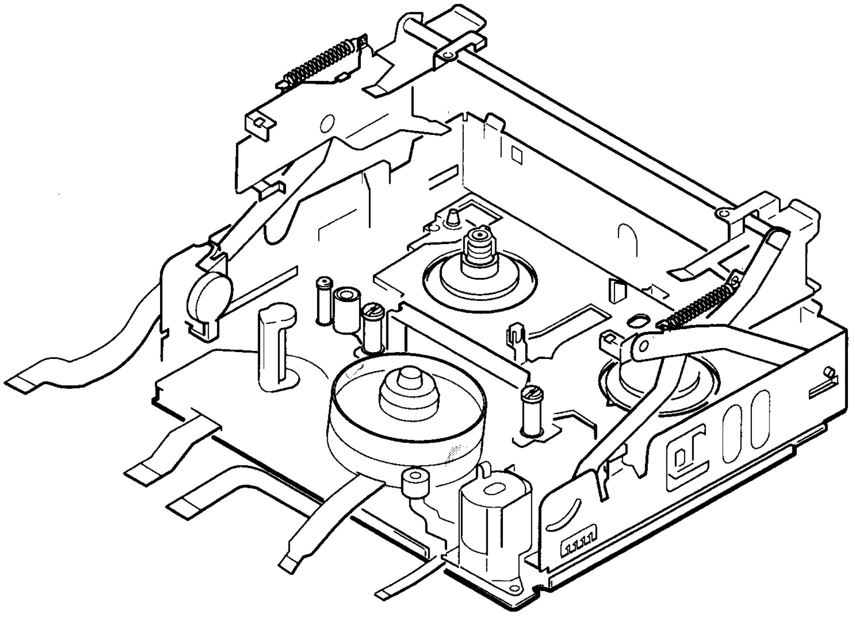
CCD-TR618E/TR718E/TR728E/TRV49E/
TRV58E/TRV59E/TRV78E/TRV98E

8mm Video MECHANICAL ADJUSTMENT MANUAL Ⅶ

B MECHANISM

Video8

Use this mechanical adjustment manual Ⅶ together with the service manual of the respective models.



8 MECHANISM DECK

SONY®

MICROFILM

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For the mode selector operation, schematic diagram and parts list, refer to the Supplement-1 Manual.

1. PREPARATION FOR CHECKING, ADJUSTING AND REPLACING THE MECHANISM

For the disassembly procedures of the cabinet and printed wiring boards, please refer to the "DISASSEMBLY" section of the service manual of the respective models.

To re-assemble the mechanical parts which are disassembled in the following sections, perform the disassembly steps in reverse, unless otherwise specified.

The mechanisms are adjusted while set in the USE mode of operation. (Refer to the "Mode Selector Operation Procedure of the Supplement-1 Manual for how to enter the USE mode.)

1-1. Cassette Compartment Block Assy

1. Disassembly Procedure (Refer to Fig. 1.)

1) Set the mechanism to USE mode.
2) Confirm that the Cassette Compartment Block Assy is opened. If it is not opened, open it referring to Fig. a.
3) Remove the claws Ⓐ and Ⓑ of the Damper Assy ① from the chassis.
4) Remove the washer ② from the shaft of the Cassette Compartment near the Drum, next to the loading motor. Remove the shaft of the arm from the slot.
5) Remove the shaft of the arm from the slot Ⓒ of the Cassette Compartment near the Drum, next to the capstan motor. (Refer to Fig. b)
6) Lift up the Cassette Compartment at the Drum side in the direction of the arrow Ⓓ, and remove the arm shaft of the Cassette Compartment from the LS Chassis ④ near the Reel Tables. Remove the Cassette Compartment Assy ③ in the direction of the arrow Ⓔ.

2. Precautions During Re-Assembling

1) After attaching the Tension Spring, confirm that the straight portion at the end of the curved hook of the spring is positioned inside the mechanism. (Refer to Fig. c)
2) Confirm that the claw in the bottom of the shaft near the Reel Table of the Cassette Compartment is hooked to the LS Chassis.
3) Confirm that the claw of the Damper Assy is hooked to the LS Chassis. (Refer to Fig. b)

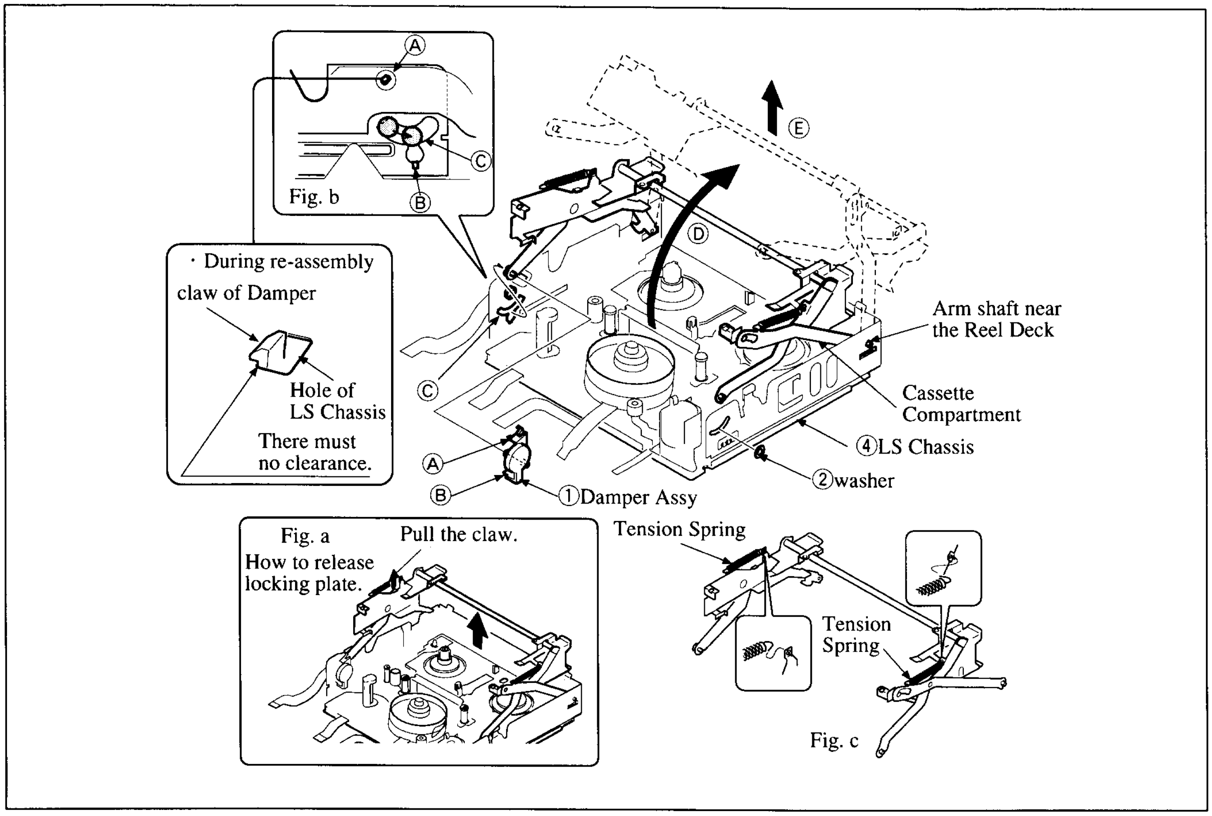

Ⓐ
Ⓒ
Fig. b
Ⓑ
Ⓔ
Ⓓ
· During re-assembly claw of Damper
Hole of LS Chassis
There must no clearance.
Ⓒ
Ⓐ
Ⓑ
①Damper Assy
Arm shaft near the Reel Deck
Cassette Compartment
④LS Chassis
②washer
Fig. a
Pull the claw.
How to release locking plate.
Tension Spring
Tension Spring
Fig. c

Fig. 1

1-2. How to Operate the Mechanism with the Cassette Compartment Block Assy Removed

1. How to load a cassette tape (Refer to Fig. 2):

1) While referring to section "DISASSEMBLY" of the respective service manual, turn the main power on with the cabinet and camera section removed. (It enables to operate the mechanical deck.)
2) Connect the adjustment remote commander (Ref. No. J-10) and establish the TEST mode.

> Example of establishing the TEST mode: model CCD-TR420E/TR440E.
> Select page: 6, address: 00, set data :01 and press the PAUSE button to release protection.
> Select page: 7, address: 01, set data: 01 and press the PAUSE button.
> After tape loading or other desired operations of mechanism are completed, be sure to perform the following:
> Select page: F, address: 01, set data :00 and press the PAUSE button.
> Select page: 6, address: 00, set data: 00 and press the PAUSE button.

3) Press the push-switch ① knob in the direction of the arrow which sets the machine into loading mode.

☆ PB, FF/REW and CUE/REV operations are possible.

2. How to establish RECORD mode:

1) Press pin of the push-switch ② (ON state) and keep the ON state by fixing with adhesive tape ③.
2) Turn the main power switch ON (select VTR or CAMERA position of in case of camera).
3) Set the RECORD switch to ON.
(When the TEST mode is selected, the rotation detection of the S and T reel tables is muted, and the top end sensor is disable which allow to run the tape.)

3. How to eject a cassette tape:

1) Press the EJECT switch to ON.

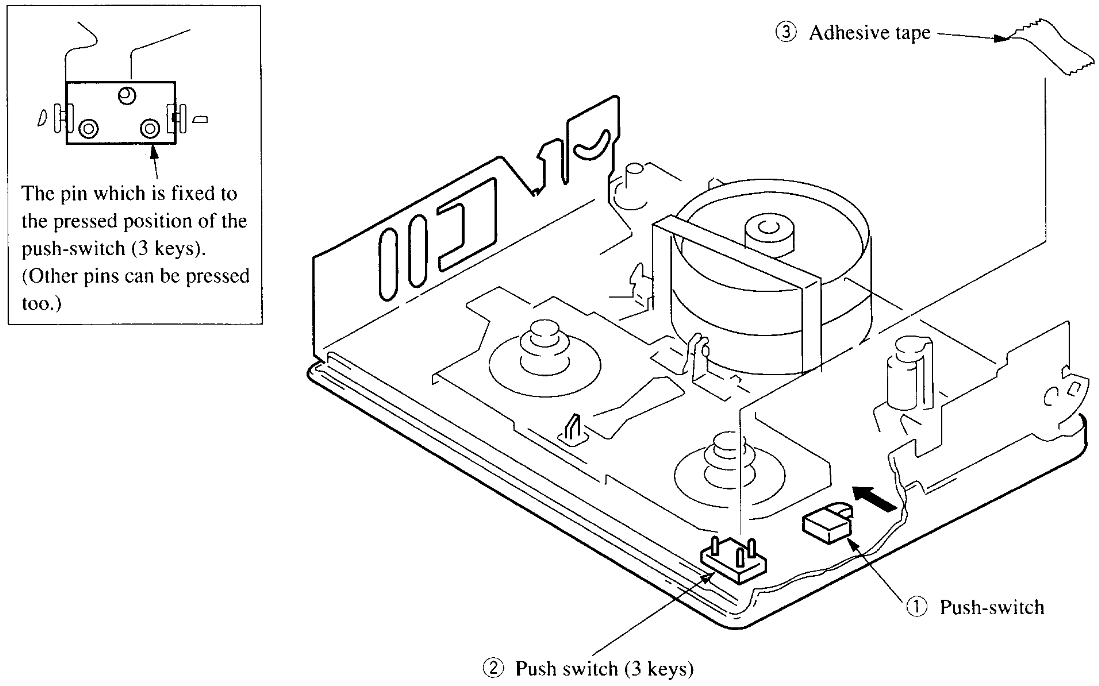

The pin which is fixed to the pressed position of the push-switch (3 keys). (Other pins can be pressed too.)
③ Adhesive tape
① Push-switch
② Push switch (3 keys)

Fig. 2

2. PERIODIC CHECK AND MAINTENANCE ITEMS

- Perform the following periodic check and maintenance to ensure that the machine functions continue to operate in peak condition, and to protect the tape and mechanism deck. After completing repair work, perform the following maintenance items regardless of how long the user's machine has been used.

2-1. Rotary Drum Assy Cleaning

Press the cleaning piece (Ref. No. J-2) moistened with cleaning fluid (Ref. No. J-1) lightly on the Rotary Drum Assy. Gently turn the Rotary Drum Assy slowly by hand counter-clockwise to clean the rotary drum.

Caution: Never attempt to turn the head drum motor by turning the main power ON. Also, never turn the drum clockwise by hand. In addition, never move the cleaning piece vertically with respect to the head tips, since this will damage them. Never clean the head drum in any way other than as described above.

2-2. Tape Path Cleaning (Refer to Fig. 3.)

1) Set the mechanism to USE mode. Clean the tape path system (TG-1, TG-2, TG-3, TG-4, pinch roller, capstan shaft) and lower drum using a very thin cotton swab (Ref. No. J-3) moistened with cleaning fluid.

Caution: Take care that the very thin cotton swab (Ref. No. J-3) does not touch the oil or grease of the various link mechanisms.

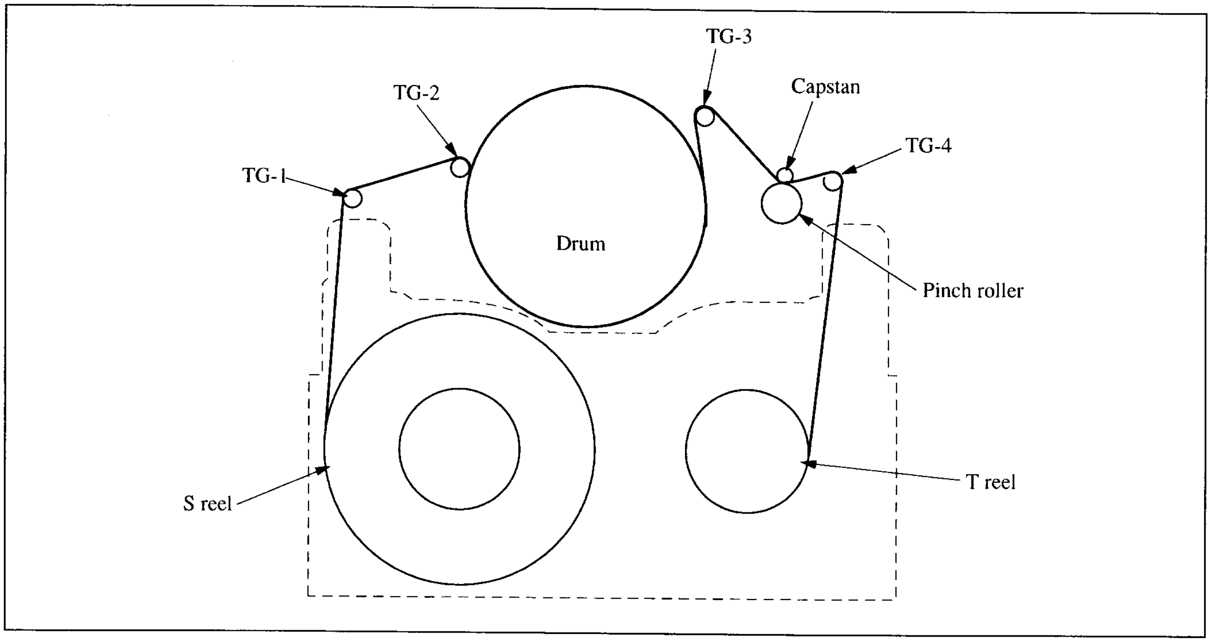


Fig. 3

2-3. Periodic Check Items

Maintenance and Inspection Points		Operating Hours										Remarks
		500	1000	1500	2000	2500	3000	3500	4000	4500	5000	
	Cleaning of tape running surface	○	○	○	○	○	○	○	○	○	○	Take care not to get oily.
	Cleaning and degaussing of Rotary Drum Assy	○	○	○	○	○	○	○	○	○	○	Take care not to get oily.
Drive System	Timing Belt	—	☆	—	☆	—	☆	—	☆	—	☆	3-965-546-01
	Capstan Shaft	—	◎	—	◎	—	◎	—	◎	—	◎	Take great care not to let any oil contact the tape running surface.
	Change Gear Shaft Relay Pulley Shaft	—	◎	—	◎	—	◎	—	◎	—	◎	
	Loading Motor	—	☆	—	☆	—	☆	—	☆	—	☆	X-3945-401-1
Performance Check	Abnormal Sound	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	
	Tape Hold-back Tension Measurement	—	☆	—	☆	—	☆	—	☆	—	☆	
	Brake System	—	☆	—	☆	—	☆	—	☆	—	☆	
	FWD RVS Torque Measurement	—	☆	—	☆	—	☆	—	☆	—	☆	

○Cleaning ◎Lubrication ☆Check

Note: When overhauling the machine, replace the parts while referring to the above table.

Note: Regarding oil

- Be sure to use the specified oil. (If the viscosity and other characteristics are different, various troubles may arise.)
  Oil: Sony part No. 7-661-018-18
  (Mitsubishi diamond oil hydro fluid NT-68)
- For the oil lubricated bearings, use oil free from dust or foreign materials. If the oil contains any dust or foreign material, the bearings will wear out quickly or burn out.
- One drop of oil is the amount of oil which forms at the tip of a stick of 2 mm diameter.

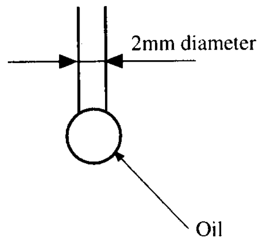


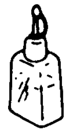
Fig. 4

2-4. Service Tool List

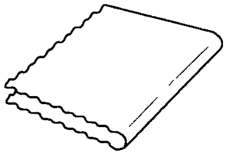
Ref. No.	Name	Parts Code	Tool Stamp	Applications
J-1	Cleaning fluid	Y-2031-001-0	——	
J-2	Cleaning piece	2-034-697-00	——	
J-3	Very thin cotton swab (made by Nippon Cotton Swab Inc. (P752D))		——	
J-4	Head demagnetizer	Commercially available	——	
J-5	Dental mirror Spare mirror	J-6080-029-A J-6080-030-1	SL-5052	Tape path
J-6	Alignment tape (NTSC : WR5-1NP) (PAL : WR5-1CP)	8-967-995-02 8-967-995-07	——	Tape path
J-7	FWD/RVS take-up torque cassette	J-6080-824A	GD-2086	
J-8	Screwdriver for tape path adjustment	J-6082-026-A	——	For tape guide adjustment
J-9	FWD/BACK tension adjustment screwdriver	J-6082-187-A	——	
J-10	Remote commander for adjustment	J-6082-053-B	——	Tape path (Setting PATH mode)
J-11	MD process table	J-6082-166-A	——	
J-12	FLOIL Grease SG-941	7-662-001-39	——	
J-13	FLOIL Grease SG-055G	7-651-000-09	——	

Other equipment
- Oscilloscope
- Analog circuit tester (input impedance 20 kΩ)

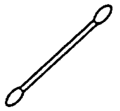
J-1



J-2



J-3



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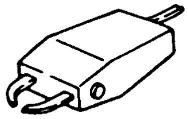

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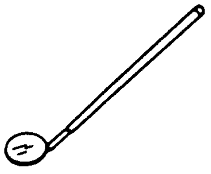

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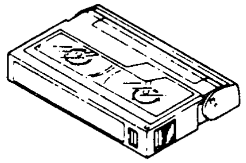
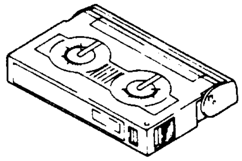
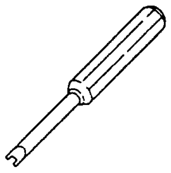


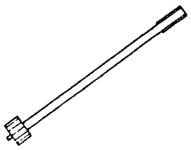
J-7



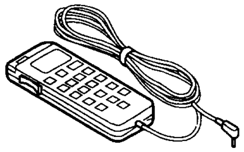
J-8



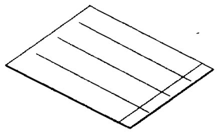
J-9



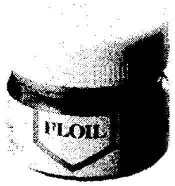
J-10



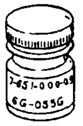
J-11



J-12



J-13



3. CHECKING, ADJUSTING AND REPLACING THE MECHANISM

3-1. HC Roller Block Assy (Refer to Fig. 5)

1. Disassembly Procedure

1) Remove the Torsion Spring ① from the cut-out Ⓐ of the motor holder. Hook it to the claw Ⓑ of the HC Arm.
2) Remove the HC Roller Block Assy in the direction shown by Ⓒ.
3) Remove the stop washer ② and remove the HC Roller Block Assy ③.

2. Precautions During Re-Assembly

1) After attaching the HC Roller Block Assy, confirm that both ends of the torsion spring are hooked to Ⓐ and Ⓓ.
2) Align the block so that the cut-out Ⓔ agrees with the rib Ⓕ.

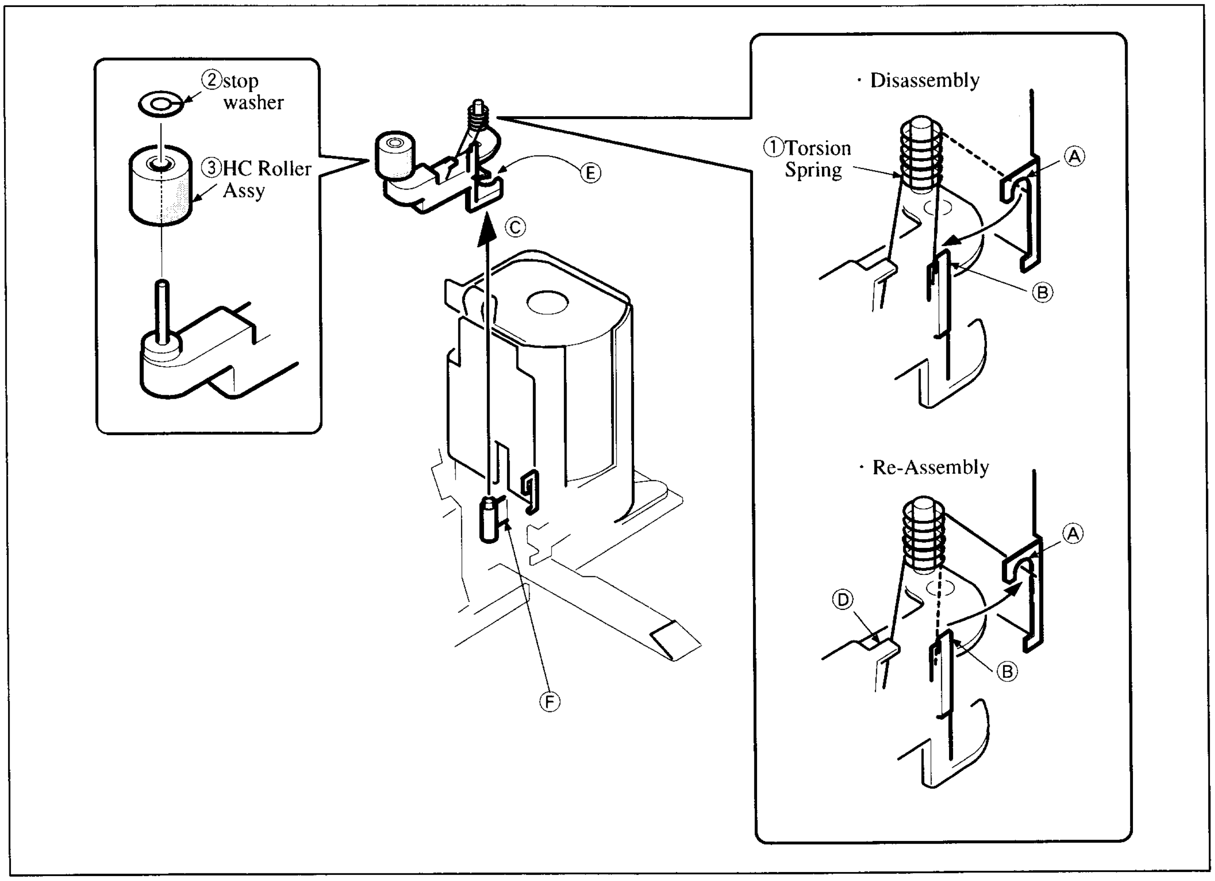

②stop washer
③HC Roller Assy
Ⓔ
Ⓒ
Ⓕ
· Disassembly
①Torsion Spring
Ⓐ
Ⓑ
· Re-Assembly
Ⓐ
Ⓓ
Ⓑ

Fig. 5

3-2. Drum Assy (Refer to Fig. 6)

1. Disassembly Procedure

1) Set the mechanism to USE mode.
2) Remove the three screws (M 1.4) ① and remove the Drum Assy ②.

Caution: Be careful not to touch the outer circumference of the drum. (Hold the portions Ⓐ and Ⓑ of the drum assy.)

2. Precautions During Re-Assembly

1) Be careful not to touch the outer circumference of the drum. (Hold the portions Ⓐ and Ⓑ of the drum assy.)
2) When tightening the three screws (M 1.4), tighten them in the order Ⓒ, then Ⓓ, then Ⓔ.
3) After attaching the Drum Assy, perform the steps in section "4. TAPE PATH ADJUSTMENT".

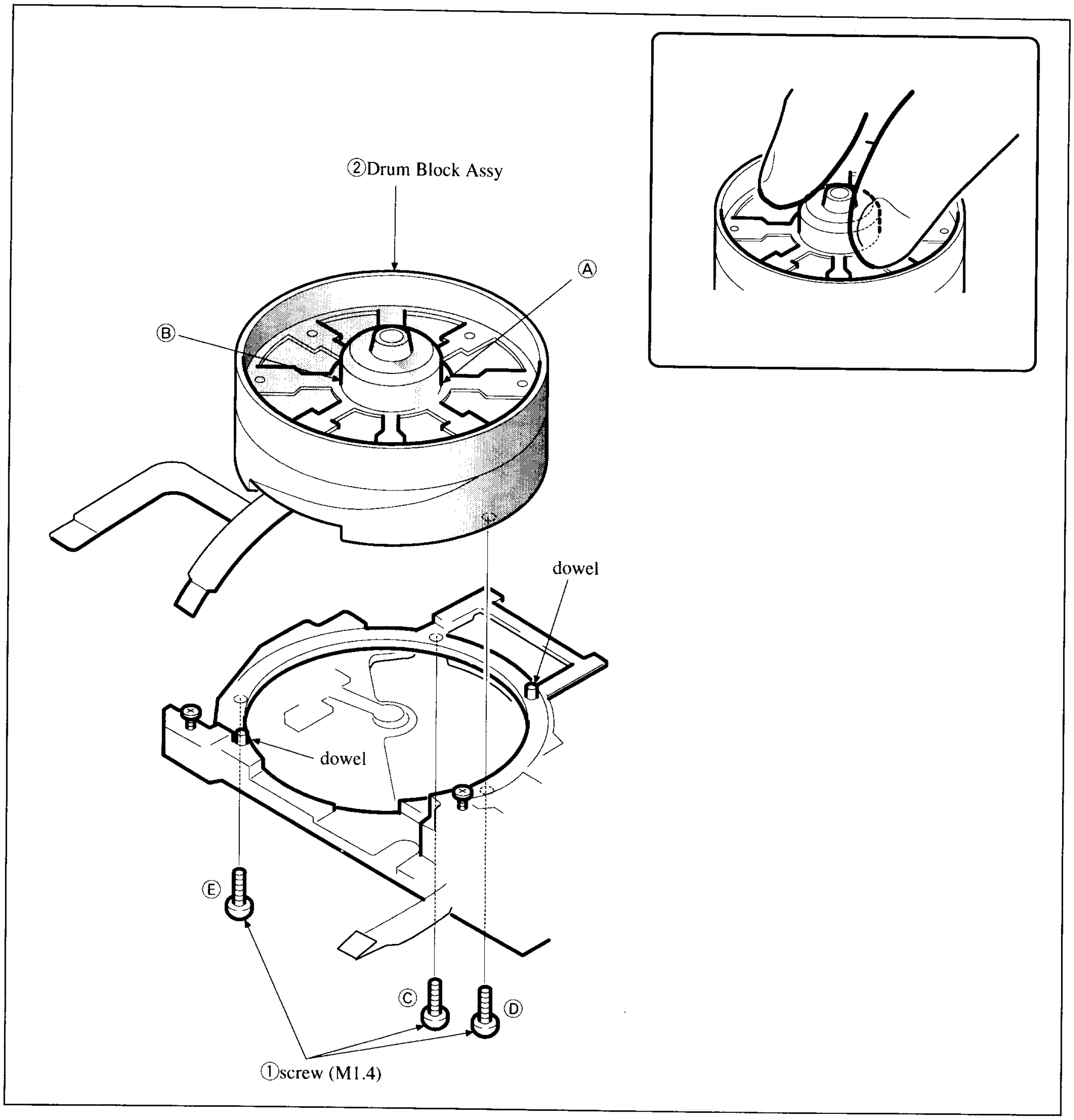


Fig. 6

3-3. Drum Base Block Assy, Shaft Ground (Refer to Fig. 7)

1. Disassembly Procedure

1) Remove the Drum Assy referring to section 3-2.
2) Remove the three screws (M 1.4×2.5) ① and remove the Drum Base Block Assy ②.
3) Remove the screw (M 1.7×1.4) ③ and remove the Shaft Ground ④.

Caution 1: Do not hold the spring portion of the Shaft Ground ④.

Caution 2: The loading motor can be removed while the mechanism is in this state. However, do not move any other mechanical parts (especially gears and cams around the rotary switch) when removing the loading motor. (Refer to 3-11.)

2. Precautions During Re-Assembly

1) Do not touch the spring portion of the Shaft Ground ④.
2) When tightening the three screws (M 1.4×2.5), tighten them in the order of Ⓐ, then Ⓑ, then Ⓒ.
3) After re-assembly is completed, perform the steps in section "4. TAPE PATH ADJUSTMENT".

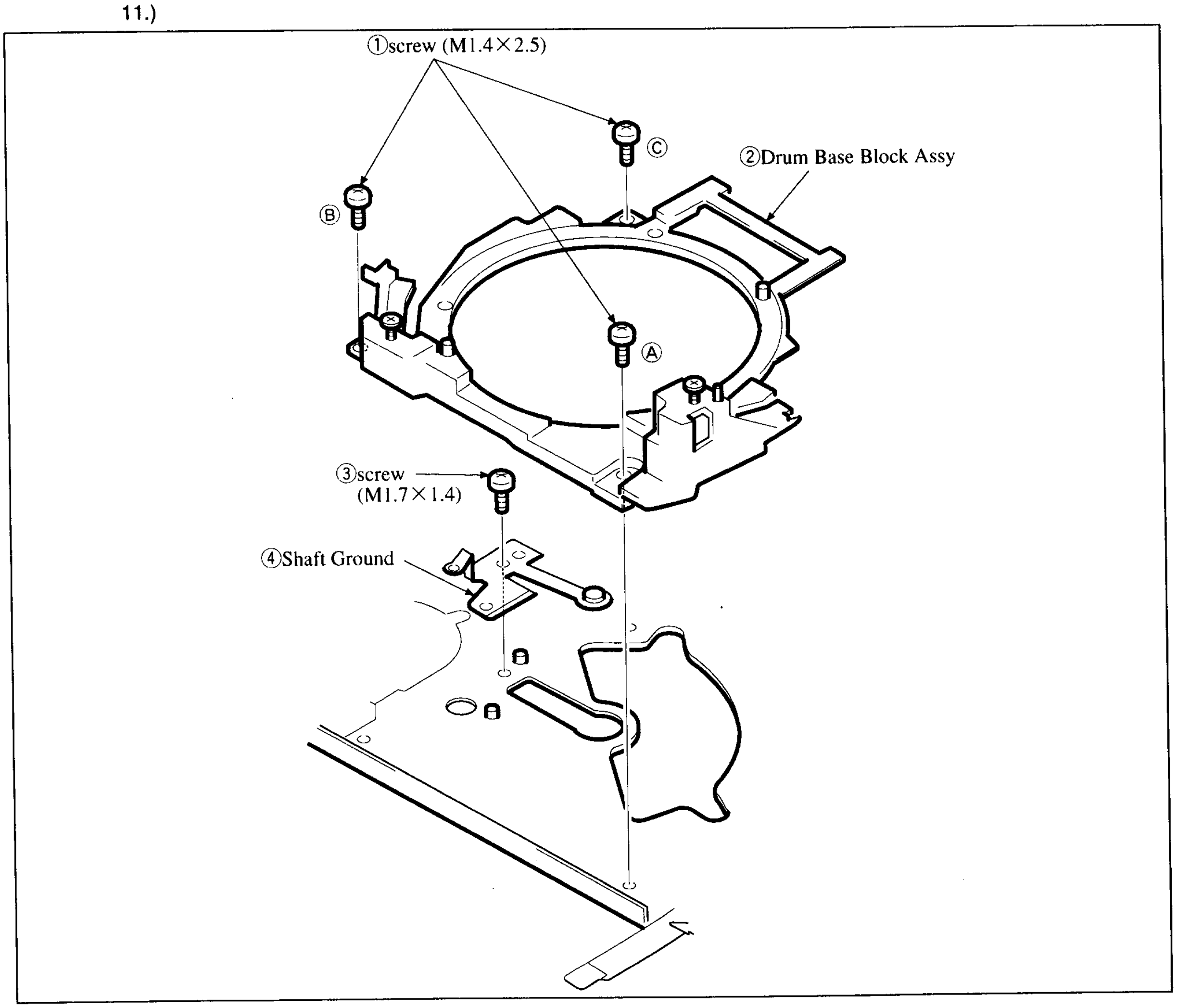


Fig. 7

3-4. Gooseneck Retainer, Gooseneck Gear Assy (Refer to Fig. 8)

1. Disassembly Procedure

1) Remove the Cassette Compartment Block Assy referring to section 1-1.
2) Remove the LED ① from the LED holder of the Gooseneck Retainer ③.
(Turn the flexible board 90° outside and remove it upward.)
3) Remove the three screws (M 1.4×2.5) ② and remove the Gooseneck Retainer ③.
4) Remove the stop washer ④ and remove the Gooseneck Gear Assy ⑤.

2. Precautions During Re-Assembly

1) When attaching the Gooseneck Retainer ③, take care that the Gooseneck Retainer ③ does not collide with the tension regulator band. (The tension regulator band must be located inside.)
2) Hook the T-side claw on the guide.

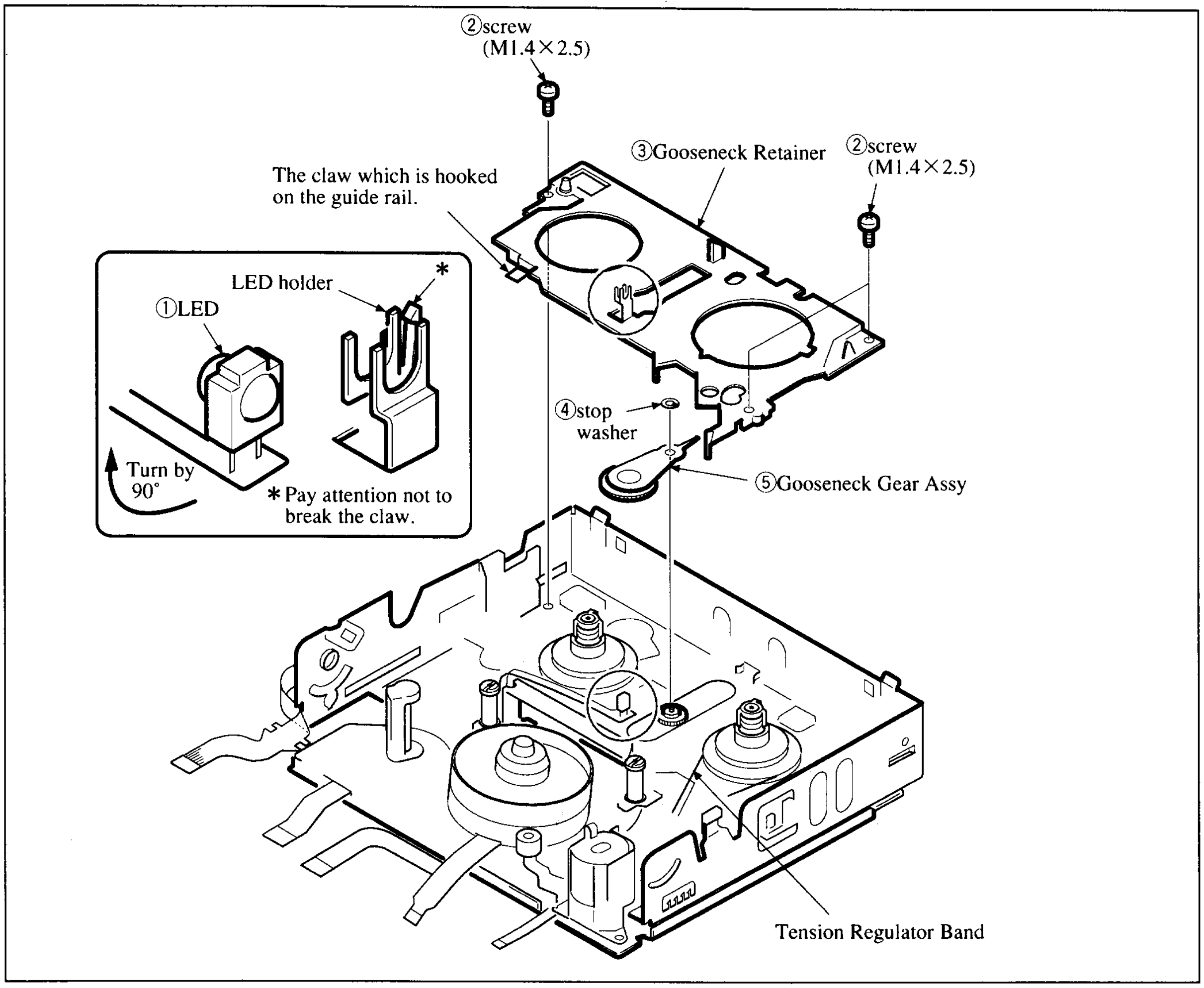

②screw
(M1.4×2.5)
③Gooseneck Retainer
②screw
(M1.4×2.5)
The claw which is hooked on the guide rail.
LED holder
*
①LED
Turn by 90°
* Pay attention not to break the claw.
④stop washer
⑤Gooseneck Gear Assy
Tension Regulator Band

Fig. 8

3-5. LS Chassis Block Assy, Mechanical Chassis Block Assy (Refer to Fig. 9)

1. Disassembly Procedure

1) Remove the Cassette Compartment Block Assy referring to section 1-1.
2) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
3) Remove the FP-221 flexible board ① from the flexible board holder.
4) Remove the stop ring E1.5 ②.
5) Remove the two screws (M 1.4×2.5) ③ and remove the LS Chassis Block Assy ④ from the Mechanical Chassis Block ⑤ in the direction of the arrow Ⓐ.

Note: The Tension Regulator Plate (2) can easily fall into the Mechanical Chassis Block Assy. Take care not to drop it.

2. Precautions During Re-Assembly

1) Before attaching the LS Chassis Block Assy, confirm that the respective phase-determining holes have been adjusted for correct phase. Also confirm that the specified locations of the Mechanical Chassis Block Assy and the LS Chassis Block Assy are coated with grease SG-055G (Ref. No. J-13). (Refer to Fig. a)
2) When attaching the LS Chassis Block Assy, insert the LS Cam Plate (on the LS chassis side) into the dowel (on the mechanical chassis side). Also insert the TG1 Cam Axis (on the LS chassis side) into the Tension Regulator Plate (2) (on the mechanical chassis side).
3) When attaching these block assemblies, attach them while pressing the TG-1 Arm Assy in the direction toward the TG-2 Guide. (Refer to Fig. b)
4) Pay attention that the TG-1 Arm is not floated.

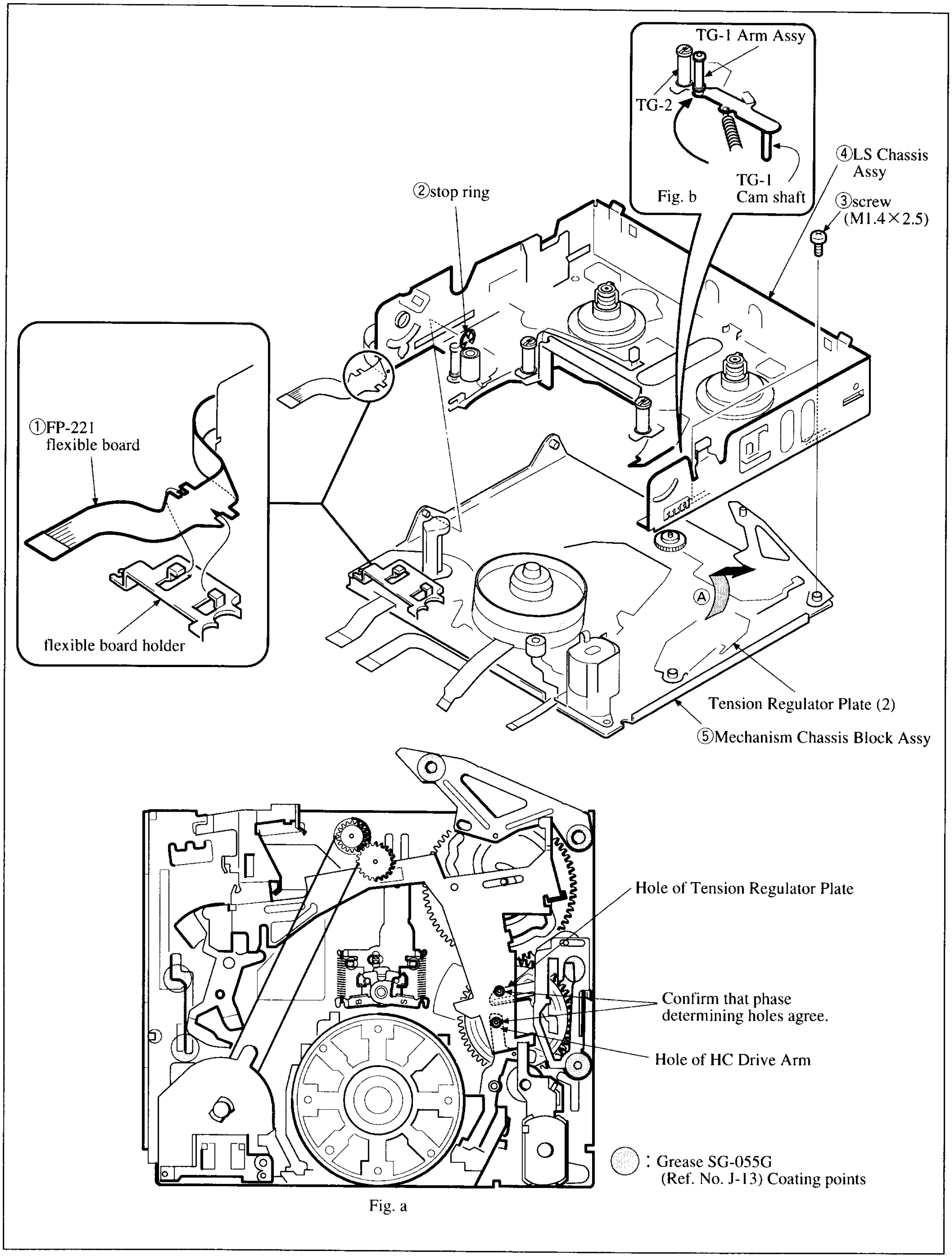

TG-1 Arm Assy
TG-2
TG-1
Cam shaft
Fig. b
④LS Chassis
Assy
③screw
(M1.4×2.5)
②stop ring
①FP-221
flexible board
flexible board holder
Ⓐ
Tension Regulator Plate (2)
⑤Mechanism Chassis Block Assy
Hole of Tension Regulator Plate
Confirm that phase
determining holes agree.
Hole of HC Drive Arm
: Grease SG-055G
(Ref. No. J-13) Coating points
Fig. a

Fig. 9

- **PARTS CONSTITUTING THE LS CHASSIS.**

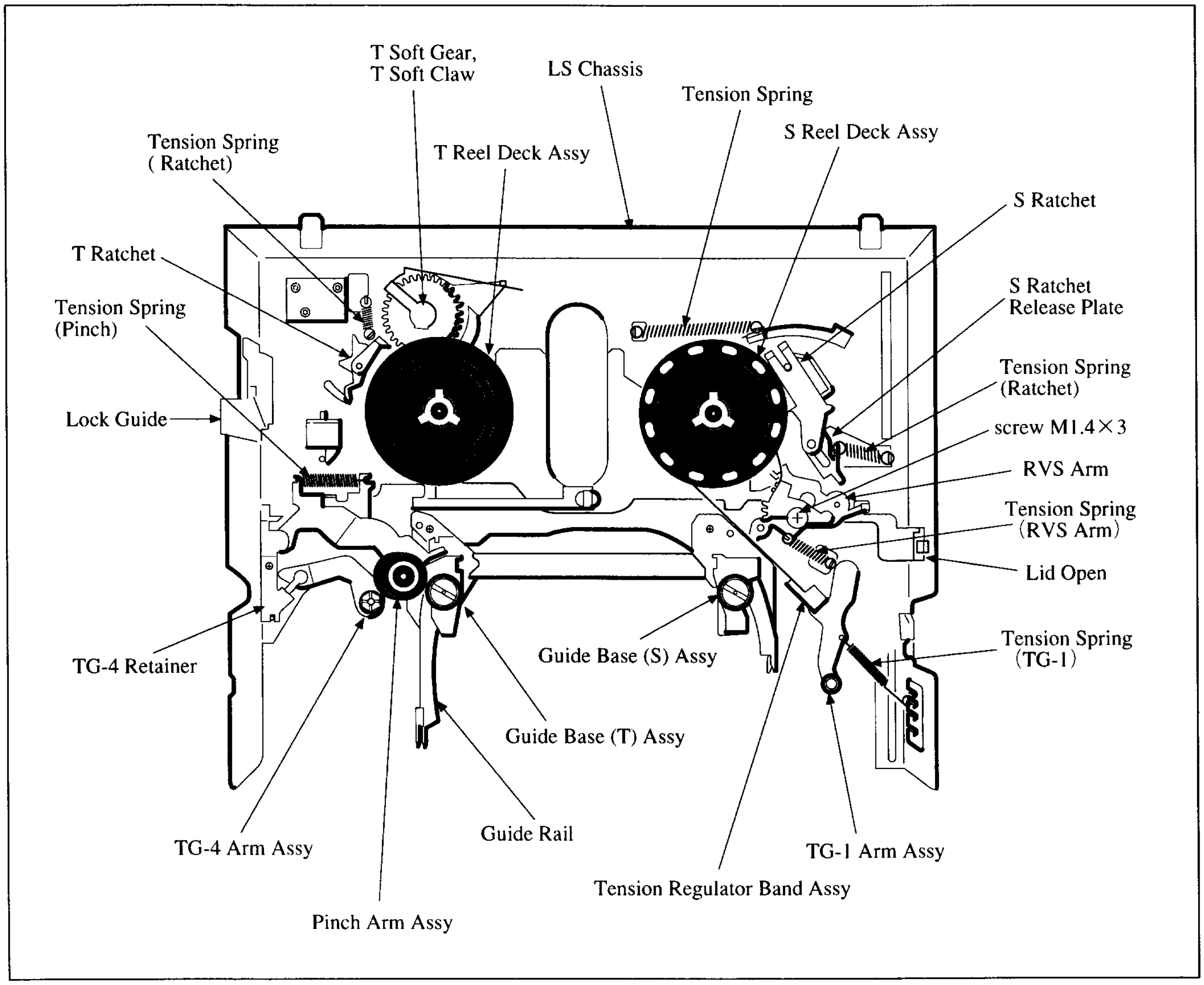

T Soft Gear,
T Soft Claw
LS Chassis
Tension Spring
S Reel Deck Assy
Tension Spring
(Ratchet)
T Reel Deck Assy
S Ratchet
T Ratchet
S Ratchet
Release Plate
Tension Spring
(Pinch)
Tension Spring
(Ratchet)
Lock Guide
screw M1.4×3
RVS Arm
Tension Spring
(RVS Arm)
Lid Open
Tension Spring
(TG-1)
TG-4 Retainer
Guide Base (S) Assy
Guide Base (T) Assy
Guide Rail
TG-4 Arm Assy
TG-1 Arm Assy
Tension Regulator Band Assy
Pinch Arm Assy

Fig. 10

3-6. T Reel Table Assy, T Ratchet, T Soft Gear Block Assy (Refer to Fig. 11)

1. Disassembly Procedure

1) Remove the Cassette Compartment Block Assy referring to section 1-1.
2) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
3) Remove the claw of the T Reel Deck Assy ① from the chassis and remove the T Reel Deck Assy from its shaft.
4) Remove the Tension Spring (Ratchet) ② from the LS Chassis and turn the T Ratchet ③ in the direction of the arrow Ⓐ and remove it .
5) Turn the T Soft Gear Block Assy ④ in the direction of the arrow Ⓑ and remove it .

2. Precautions During Re-Assembly

1) Confirm that the protrusions of both the T Soft Gear Block Assy and T Ratchet are securely locked to the LS Chassis.
2) Be careful not to deform the claw.

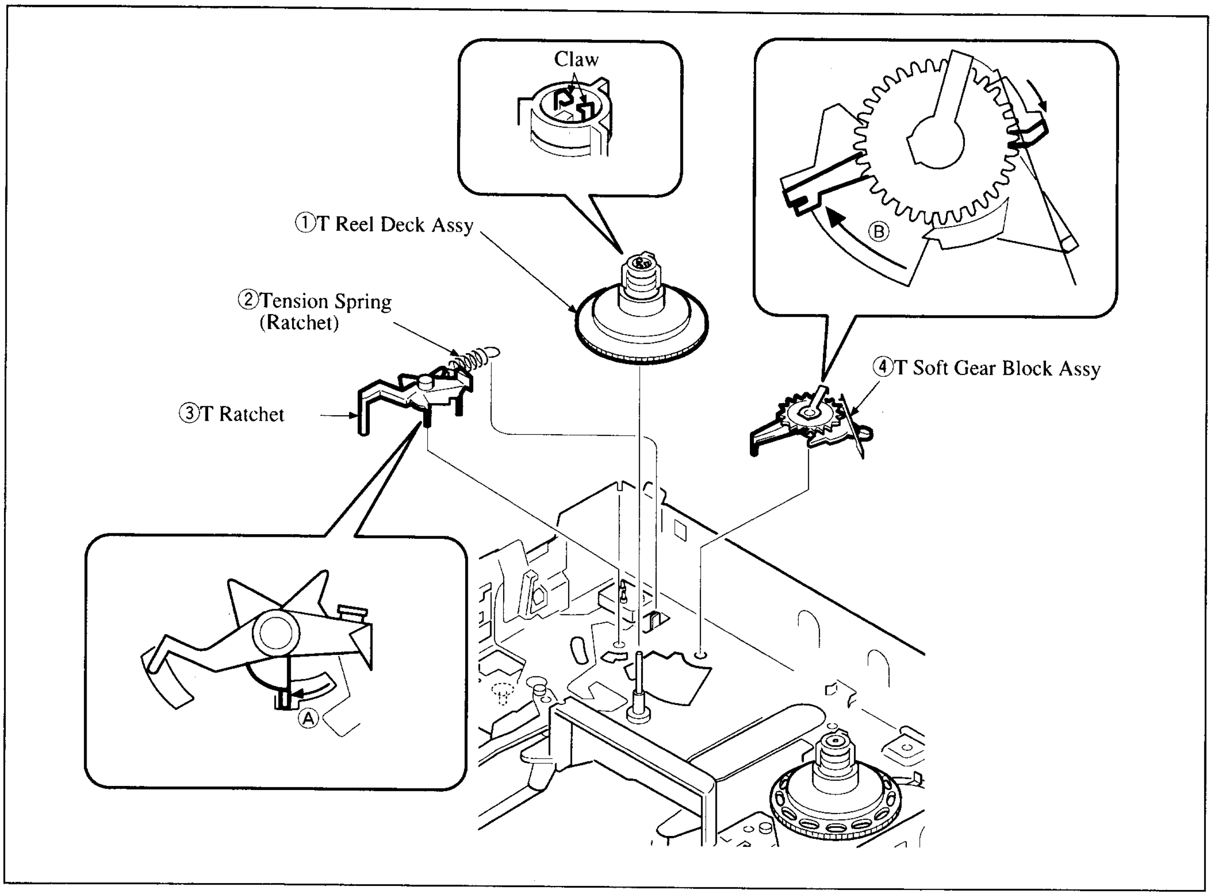


Fig. 11

3-7. Tension Regulator Band Assy, TG1 Arm Assy, S Reel Table Assy, S Ratchet, S Ratchet Release Plate, RVS Arm (Refer to Fig. 12)

1. Disassembly Procedure

1) Remove the Cassette Compartment Block Assy referring to section 1-1.
2) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
3) Remove the Tension Spring (TG1) ① from the LS Chassis.
4) Remove the screw (M 1.4×3) ② and remove the Tension Adjustment Block of the Tension Regulator Band Assy ④ form RVS Arm.
5) Release the S Ratchet ⑥ in the direction of the arrow Ⓐ and remove the Tension Regulator Band (while taking care not to bend the band) from the S Reel.
6) Remove the TG1 Arm Assy ③ from the LS Chassis, then remove the claw of the Tension Regulator Band Assy ④. (Refer to Fig. a)
7) Remove the claw of the S Reel Deck Assy ⑤ from the chassis and remove the S Reel Deck Assy from its shaft.
8) Remove the S Ratchet ⑥. (Because it is press-fitted, insert tip of screwdriver into the center of rotation and remove it.
9) Remove the Tension Spring (ratchet) ⑦ from the LS Chassis and remove the S Ratchet Release Plate ⑧.
10) Remove the Tension Spring ⑨ from the LS Chassis and remove the RVS Arm ⑩ by turning it..

2. Precautions During Re-Assembly

1) Confirm that the dowel of the S Ratchet Release Plate is inserted into the groove of the S ratchet and confirm that the center of the ratchet is press-fitted into bottom of the shaft. (It can be used again.)
2) When attaching the Tension Regulator Band Assy, take care not to bend it.
3) Pay attention that oil or grease is not spit on the surface of the Tension Regulated Band. (Pay attention also not to touch it with hand directly.)
4) Confirm that the tension regulator band is correctly inserted into the groove of the S Reel Deck Assy ⑤. (Refer to Fig. b)
5) When securing the Tension Adjustment Block using the screw, press it toward the position which gives the least tension, then tighten the fixing screw.
6) Before attaching the TG1 Arm Assy, coat the LS Chassis TG1 boss with oil (1/2 drop).
7) Do not touch the tape guide of the TG1 Arm Assy with bare hands.
8) Confirm that the claw of the S Reel Deck Assy is not deformed.

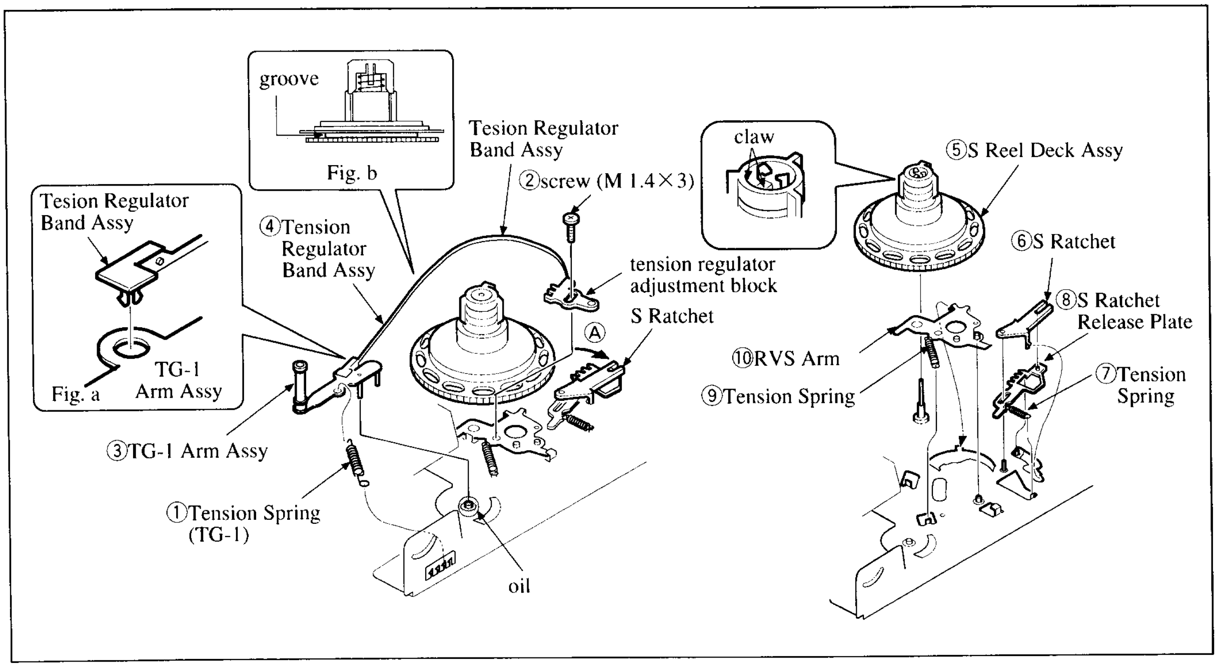

groove
Fig. b
Tesion Regulator Band Assy
②screw (M 1.4×3)
claw
⑤S Reel Deck Assy
Tesion Regulator Band Assy
④Tension Regulator Band Assy
⑥S Ratchet
tension regulator adjustment block
S Ratchet
Ⓐ
⑧S Ratchet Release Plate
⑩RVS Arm
TG-1 Arm Assy
Fig. a
⑨Tension Spring
⑦Tension Spring
③TG-1 Arm Assy
①Tension Spring (TG-1)
oil

Fig. 12

3-8. Pinch Arm Assy, TG4 Arm Block Assy (Refer to Fig. 13)

1. Disassembly Procedure

1) Remove the Cassette Compartment Block Assy referring to section 1-1.
2) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
3) Remove the LS Chassis Block Assy referring to section 3-5.
4) Remove the Torsion Spring (pinch) ① from an end of Pinch Arm and hook it on the cut-out Ⓐ of the LS Chassis.
5) Remove the screw (M 1.4×2.5) ② and remove the TG4 Retainer ③.
6) Remove the TG4 Arm Block Assy ④ and remove the Torsion Spring ⑤ while paying attention to the Torsion Spring ⑤.
7) Remove the Pinch Arm Assy ⑥. (Caution: The Pinch Press Roller is easy to drop. Pay attention not to drop it.)
8) Remove the Torsion Spring (pinch) ① from the cut-out of the LS Chassis in the order of Ⓐ then Ⓑ.

2. Precautions During Re-Assembly

1) Before attaching these parts, coat the LS chassis pinch arm boss and TG4 arm boss with grease SG-055G (Ref. No. J-13).
2) Do not touch the tape guide of the TG4 Arm Block Assy and roller of the Pinch Arm Assy with bare hand.
3) After coating the Pinch Press Shaft of the Pinch Arm Assy ③ with grease SG-055G (Ref. No. J-13), attach the Pinch Press Roller.

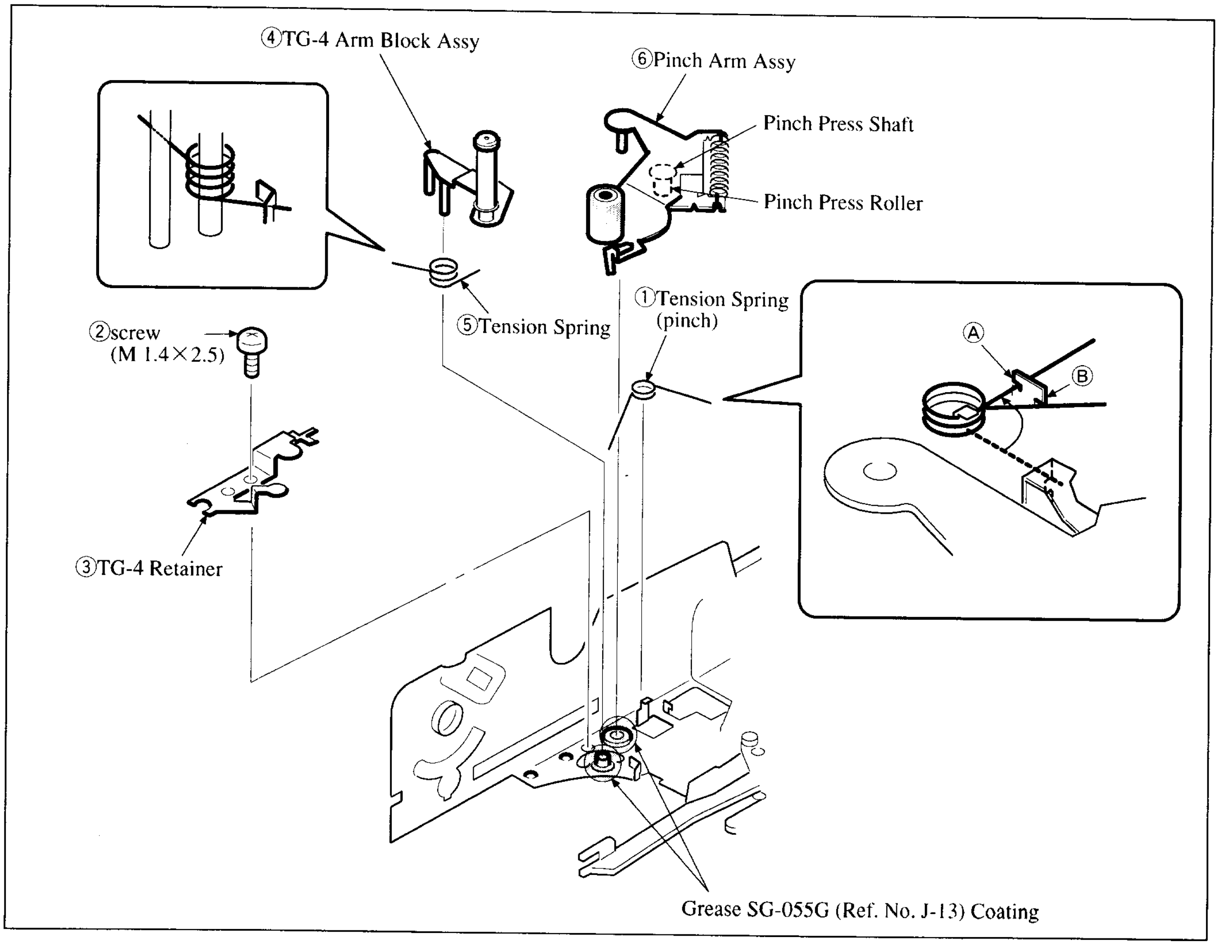

④TG-4 Arm Block Assy
⑥Pinch Arm Assy
Pinch Press Shaft
Pinch Press Roller
⑤Tension Spring
①Tension Spring (pinch)
②screw (M 1.4×2.5)
③TG-4 Retainer
Ⓐ
Ⓑ
Grease SG-055G (Ref. No. J-13) Coating

Fig. 13

3-9. LS Cam Plate, LS Guide Cover, Lid Opener, EJ Arm, Lock Guide
(Refer to Fig. 14)

1. Disassembly Procedure

1) Remove the Cassette Compartment Block Assy referring to section 1-1.
2) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
3) Remove the LS Chassis Block Assy referring to section 3-5.
4) Remove the two screws (M 1.4×2.5) ① and remove the the LS Cam Plate ②.
   In this state, write a mark on the screw ① and on the LS Chassis indicating the position of the LS Cam Plate which helps during re-assembly.
5) Remove the LS Guide Cover ③.
6) Remove the Lock Guide ④ in the upward direction. (Refer to Fig. a)
7) Remove the Lid Open ⑤ in the direction of the arrow Ⓒ while pushing Ⓑ portion .
8) Remove the EJ Arm ⑥ . (The EJ Arm ⑥ is press-fitted. If the EJ Arm ⑥ is not damaged, it is not necessary to replace.)

2. Precautions During Re-Assembly

1) After the captioned parts are attached, confirm that the respective claws and dowels are engaged completely.
2) If the EJ Arm ⑥ is removed, be sure to replace it with the new replacement EJ Arm.
3) If any mark is not written when removing the LS Cam Plate ②, adjust and attack it as shown in Fig. b.

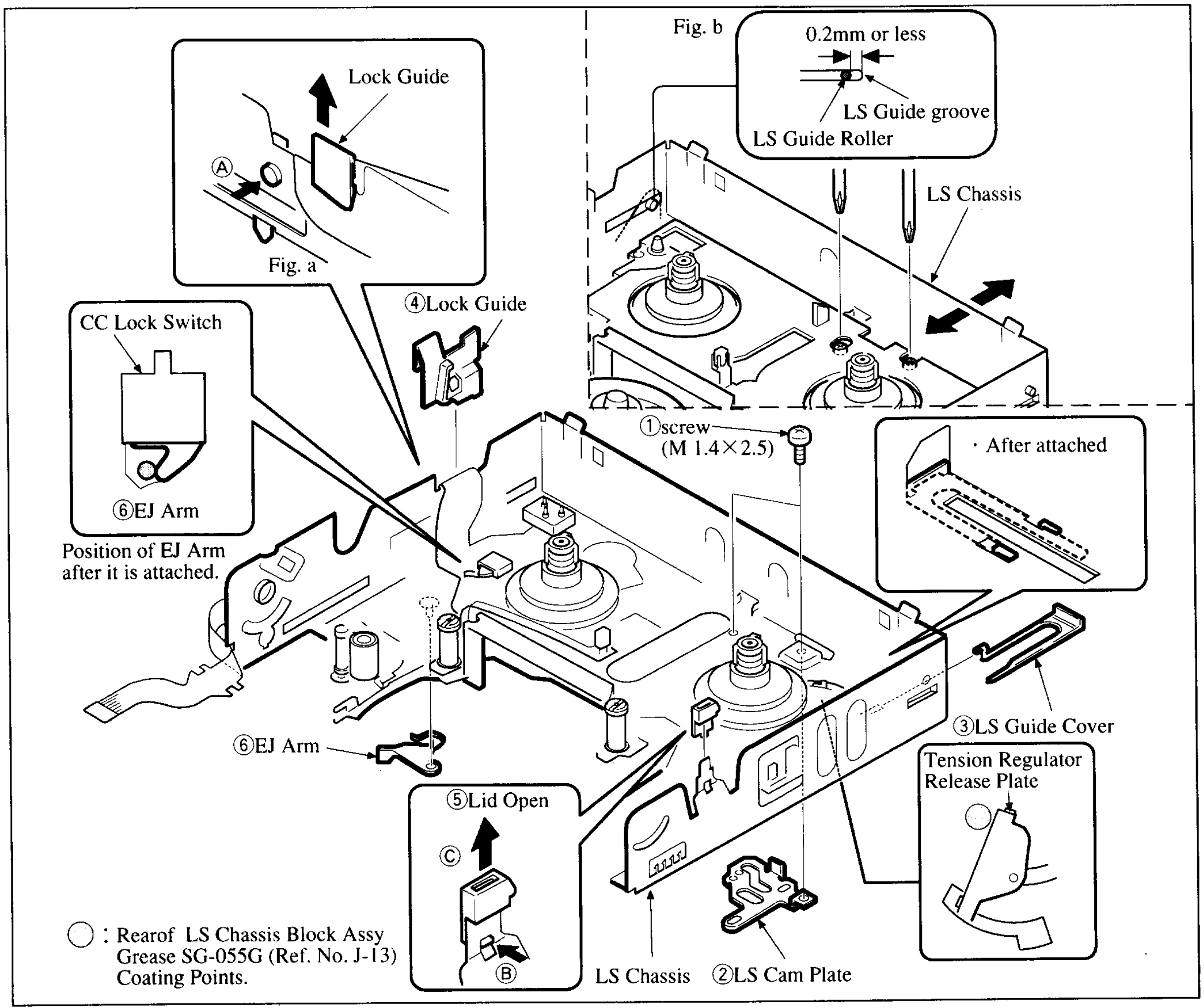

Lock Guide
Ⓐ
Fig. a
④Lock Guide
CC Lock Switch
⑥EJ Arm
Position of EJ Arm after it is attached.
Fig. b
0.2mm or less
LS Guide groove
LS Guide Roller
LS Chassis
①screw (M 1.4×2.5)
· After attached
③LS Guide Cover
Tension Regulator Release Plate
⑥EJ Arm
⑤Lid Open
Ⓒ
Ⓑ
○ : Rearof LS Chassis Block Assy Grease SG-055G (Ref. No. J-13) Coating Points.
LS Chassis
②LS Cam Plate

Fig. 14

3-10. Guide Base (S) and (T) Block Assemblies, Guide Rail (Refer to Fig. 15)

1. Disassembly Procedure

1) Remove the Cassette Compartment Block Assy referring to section 1-1.
2) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
3) Remove the LS Chassis Block Assy referring to section 3-5.
4) While pushing the GB Stoppers (S) and (T) in the direction of arrow Ⓐ, press the guide arm in the direction of the arrow Ⓑ, and turn the Guide Base (S) and (T) Block Assemblies : ① and ② in the direction of the arrow Ⓒ respectively, and remove them.
5) Remove the two screws (M 1.4×2.5) ③ and remove the the Guide Rail Assy ④.
6) Remove the Stopper (S) and (T) : ⑤ and ⑥, then remove the GB Stopper S and T: ⑦ and ⑧.

2. Precautions During Re-Assembly

1) Pay attention not to deform the Guide Rail.
2) Do not touch the tape guide of the Guide Base (S) and (T) Block Assemblies with bare hand.
3) Pay attention not to deform the Stoppers (S) and (T).
4) When attaching the Guide Base (S) and (T) Blocks to the Guide Rail, move back the Guide Bases until the GB Stoppers (S) and (T) are locked. ("Click" sounds.)
5) After the captioned parts are attached, perform section "4. TAPE PATH ADJUSTMENT".

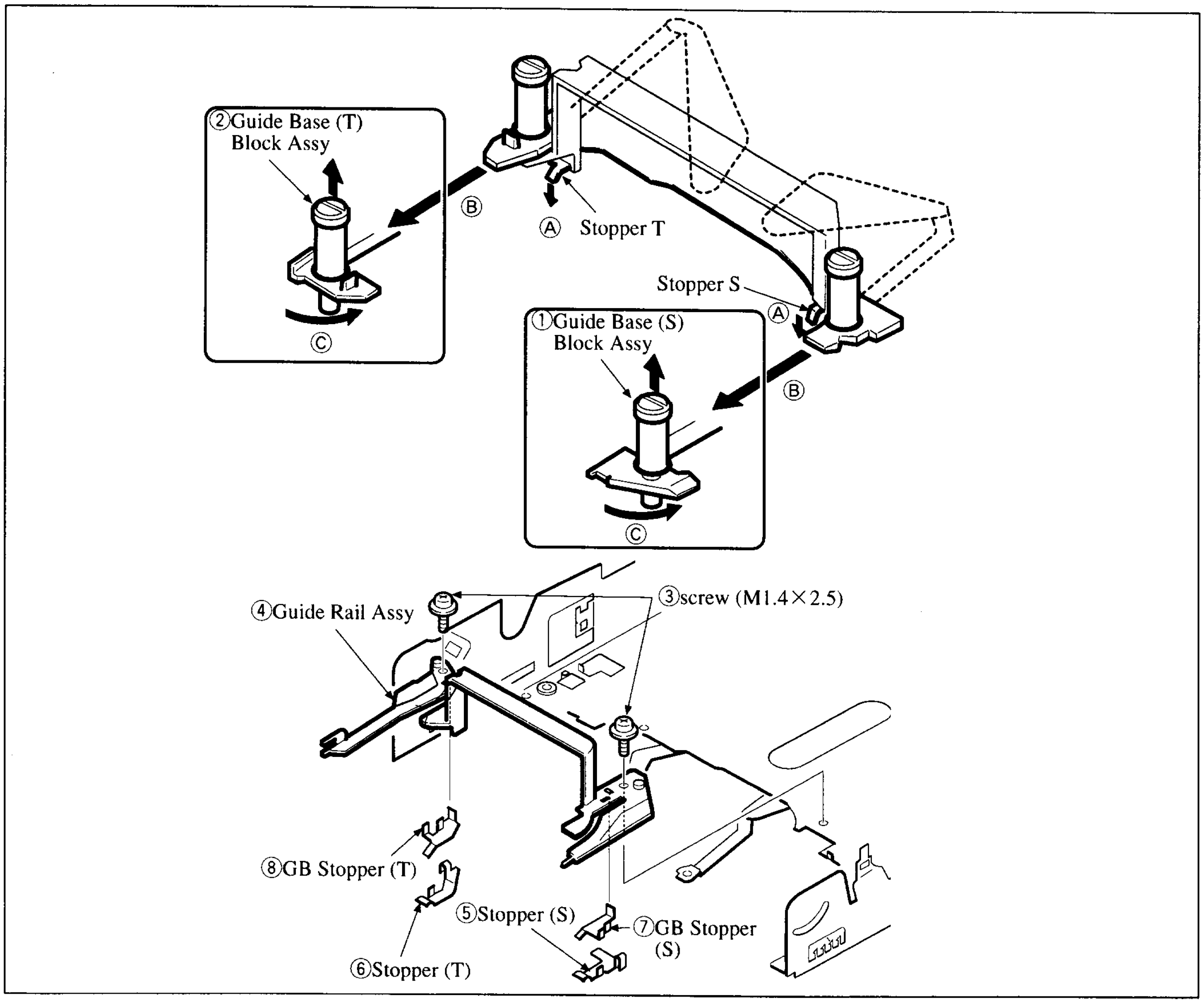

②Guide Base (T)
Block Assy
Ⓑ
Ⓒ
Ⓐ Stopper T
Stopper S
Ⓐ
①Guide Base (S)
Block Assy
Ⓑ
Ⓒ
④Guide Rail Assy
③screw (M1.4×2.5)
⑧GB Stopper (T)
⑤Stopper (S)
⑦GB Stopper
(S)
⑥Stopper (T)

Fig. 15

- **PARTS CONSTITUTING THE MECHANISM CHASSIS**

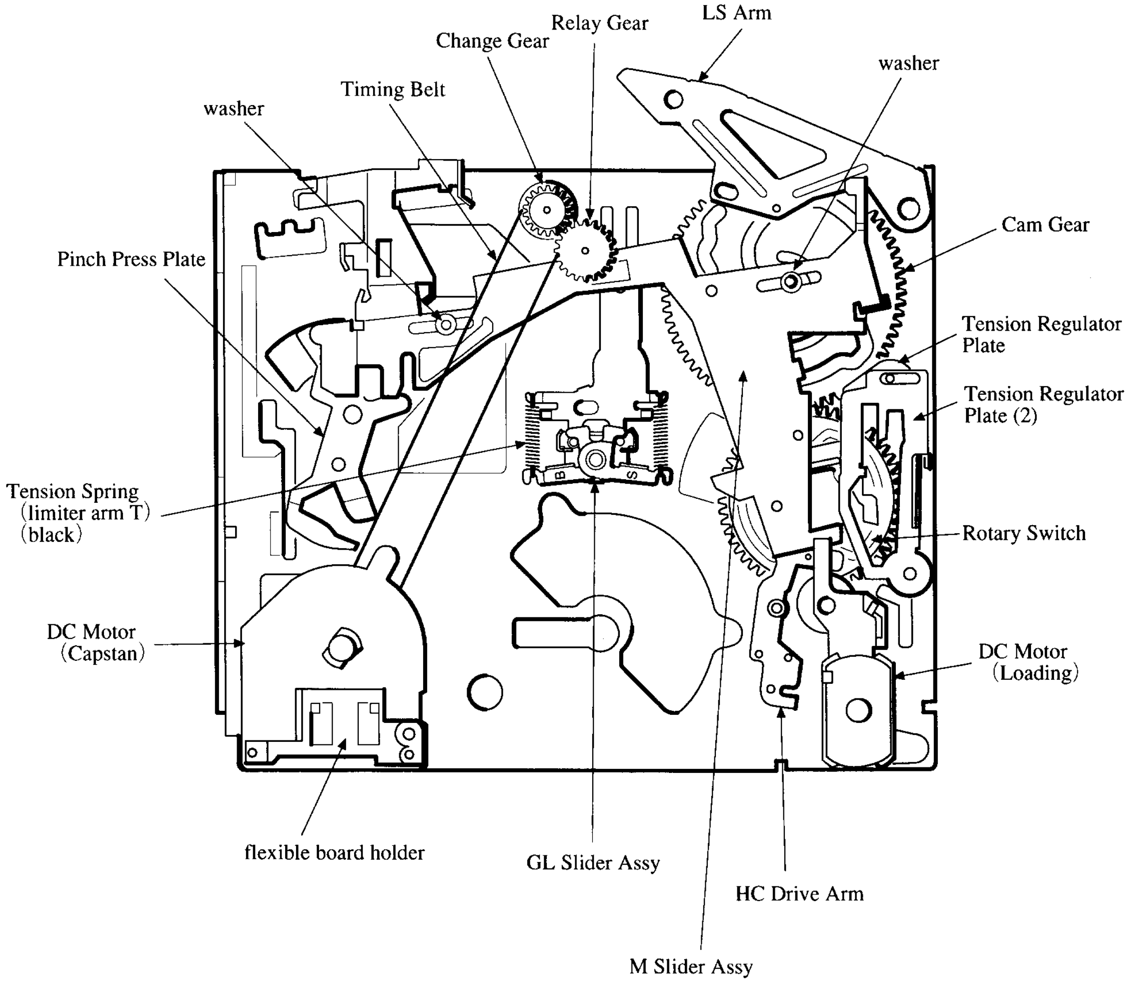

Relay Gear
LS Arm
Change Gear
washer
Timing Belt
washer
Cam Gear
Pinch Press Plate
Tension Regulator Plate
Tension Regulator Plate (2)
Tension Spring (limiter arm T) (black)
Rotary Switch
DC Motor (Capstan)
DC Motor (Loading)
flexible board holder
GL Slider Assy
HC Drive Arm
M Slider Assy

Fig.16

3-11. DC Motor Assy (Loading)
(Refer to Fig. 17)

1. Disassembly Procedure

1) Remove the Cassette Compartment Block Assy referring to section 1-1.
2) Remove the HC Roller Block Assy referring to section 3-1.
3) Remove the Drum Assy referring to section 3-2.
4) Remove the Drum Base Block Assy referring to section 3-3.
5) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
6) Remove the LS Chassis Block Assy referring to section 3-5.
7) Remove soldering from the Ⓐ portion.
8) Remove the screw (M 1.4×2.5) ① and remove the Motor Holder Block Assy ② from the mechanism chassis along with the claw beneath the Motor Holder Block Assy as shown by the arrow Ⓑ.
9) Remove the Motor Shield ③ in the direction of the arrow Ⓒ (by opening the two ★ star marked points).
10) Release the claw on top of the Motor Holder ⑤ and remove the DC Motor Assy ④ in the direction of the arrow Ⓓ.
11) Remove the Motor Holder Sleeve ⑥, Gear A⑦ and Worm Shaft ⑧ in this order.

2. Precautions During Re-Assembly

1) Before attaching the Gear A ⑥, coat the Retainer Shaft Ⓔ with grease SG-055G (Ref. No. J-13).
2) After assembling the Motor Holder Block Assy, coat the six locations shown by Fig. a with grease SG-055G (Ref. No. J-13).
3) The HC Drive Arm is easy to drop. Confirm that it is attacked referring to Fig. 19.

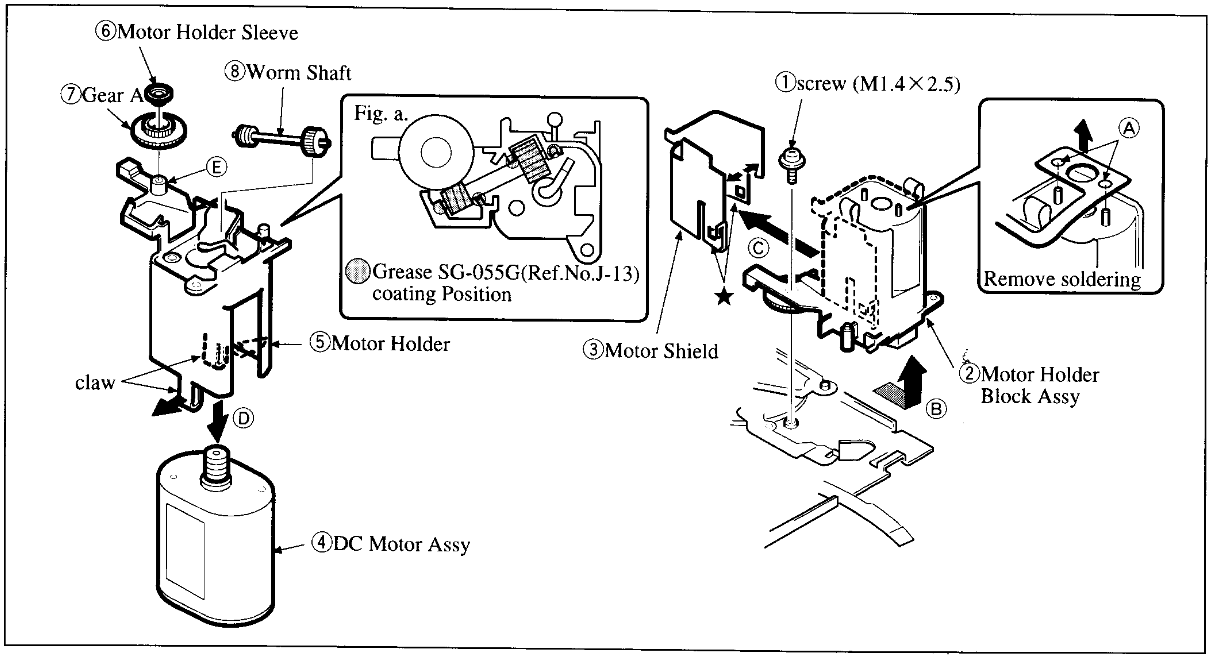

⑥Motor Holder Sleeve
⑦Gear A
⑧Worm Shaft
Ⓔ
Fig. a.
●Grease SG-055G(Ref.No.J-13) coating Position
⑤Motor Holder
claw
Ⓓ
④DC Motor Assy
①screw (M1.4×2.5)
Ⓒ
★
③Motor Shield
Ⓐ
Remove soldering
②Motor Holder Block Assy
Ⓑ

Fig. 17

3-12. Tension Regulator Plate 2, Relay Gear, M Slider Assy (Refer to Fig. 18)

1. Disassembly Procedure

1) Remove the Cassette Compartment Block Assy referring to section 1-1.
2) Remove the HC Roller Block Assy referring to section 3-1.
3) Remove the Drum Assy referring to section 3-2.
4) Remove the Drum Base Block Assy referring to section 3-3.
5) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
6) Remove the LS Chassis Block Assy referring to section 3-5.
7) Remove the DC motor referring to section 3-11.
8) Remove the Tension Regulator Plate 2 ①.
9) Remove the Relay Gear ②.
10) Remove the two washers ③. Remove the M Slider Assy ④. At the point, confirm that the LS Roller ⑤ is not dropped.

2. Precautions During Re-Assembly

1) Before attaching the M Slider Assy ④, coat the LS Roller Shaft Ⓐ on the back of the M Slider Assy, the Pinch Press Plate Shaft Ⓑ and the mechanism chassis M Slider Axis Ⓒ with grease SG-055G (Ref. No. J-13). (Refer to Fig. b)
2) While confirming the phase-determining holes, attach the M Slider Assy ④ while paying attention to the claw.
3) Attach the Tension Regulator Plate 2 ① inside the Tension Regulator Plate. (Refer to the asterisk * Marked portion of Fig. a)
4) Before attaching the Relay Gear ②, coat the mechanism chassis Relay Gear Axis Ⓓ with grease SG-055G (Ref. No. J-13).

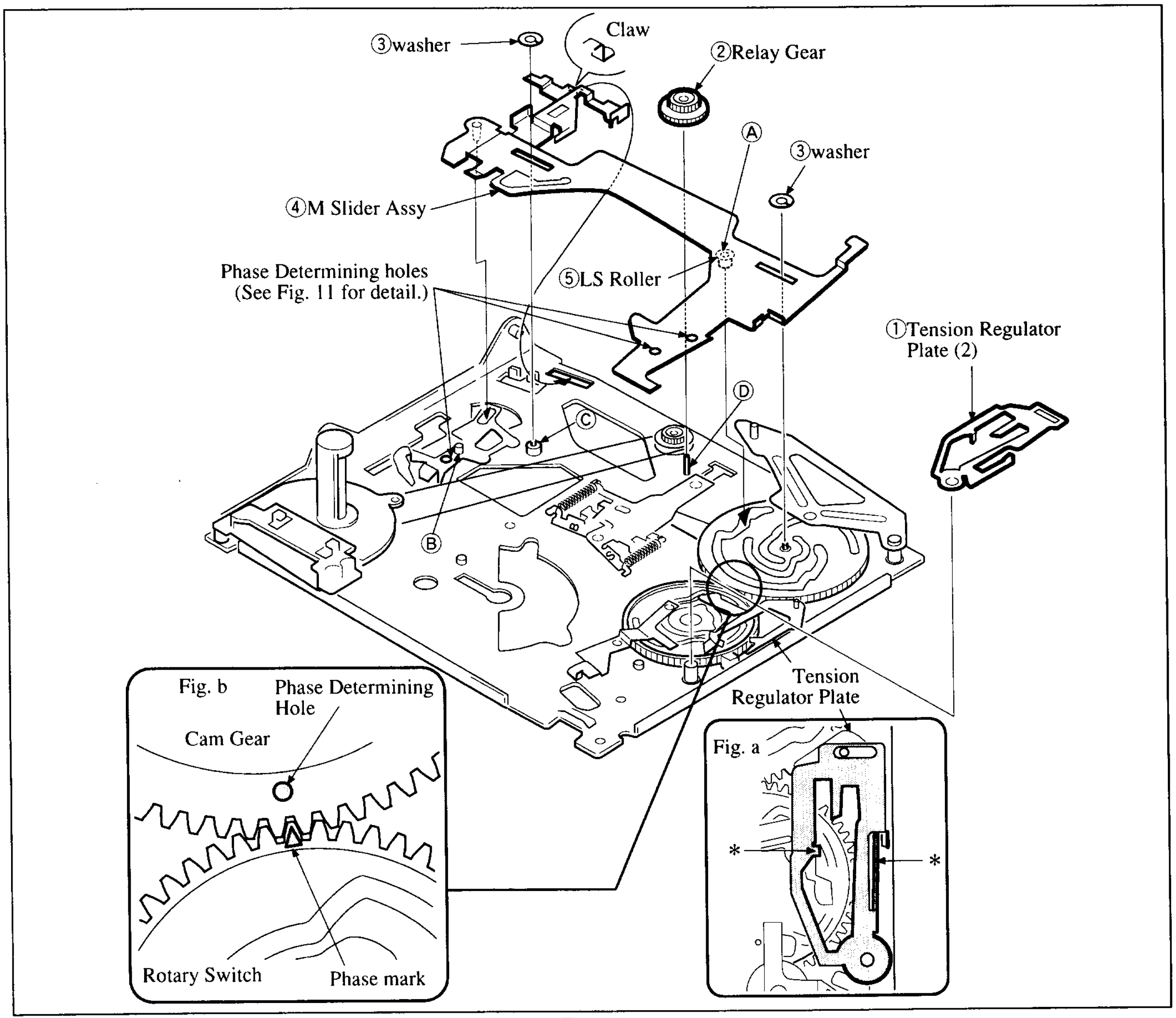

③washer
Claw
②Relay Gear
Ⓐ
③washer
④M Slider Assy
Phase Determining holes
(See Fig. 11 for detail.)
⑤LS Roller
①Tension Regulator Plate (2)
Ⓓ
Ⓒ
Ⓑ
Tension Regulator Plate
Fig. b
Phase Determining Hole
Cam Gear
Rotary Switch
Phase mark
Fig. a
*
*

Fig. 18

3-13. LS Arm, HC Drive Arm, Pinch Press Plate, Tension Regulator Plate (Refer to Fig. 19)

1. Disassembly Procedure

1) Remove the Cassette Compartment Block Assy referring to section 1-1.
2) Remove the HC Roller Block Assy referring to section 3-1.
3) Remove the Drum Assy referring to section 3-2.
4) Remove the Drum Base Block Assy referring to section 3-3.
5) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
6) Remove the LS Chassis Block Assy referring to section 3-5.
7) Remove the DC Motor Assy referring to section 3-11.
8) Remove the Tension Regulator Plate 2, Relay Gear and M Slider Assy referring to section 3-12.
9) Remove the LS Arm ①. At this point, confirm that the LS Roller ② is not dropped.
10) Remove the HC Drive Arm ③, Pinch Press Plate ④ and Tension Regulator Plate ⑤.

2. Precautions During Re-Assembly

1) Before attaching the captioned parts, confirm that phases of the Cam Gear and the Rotary Switch agree. (See Fig. a.)
2) Insert the dowel of the Tension Regulator Plate ⑤ into the groove outside the rotary switch.
3) Before attaching the Pinch Press Plate ④, check for grease on the mechanism chassis Pinch Press Plate Shaft Ⓐ. If grease cannot be found, coat it with grease SG-055G (Ref. No. J-13). After attaching the Pinch Press Plate ④, align its phase hole until it agrees with the phase-determining hole on the mechanism chassis.
4) Insert the dowel of the HC Drive Arm ③ into the groove inside the rotary switch.
5) Before attaching the LS Arm ①, coat the LS roller shaft of the LS Arm ① with grease SG-055G (Ref. No. J-13).

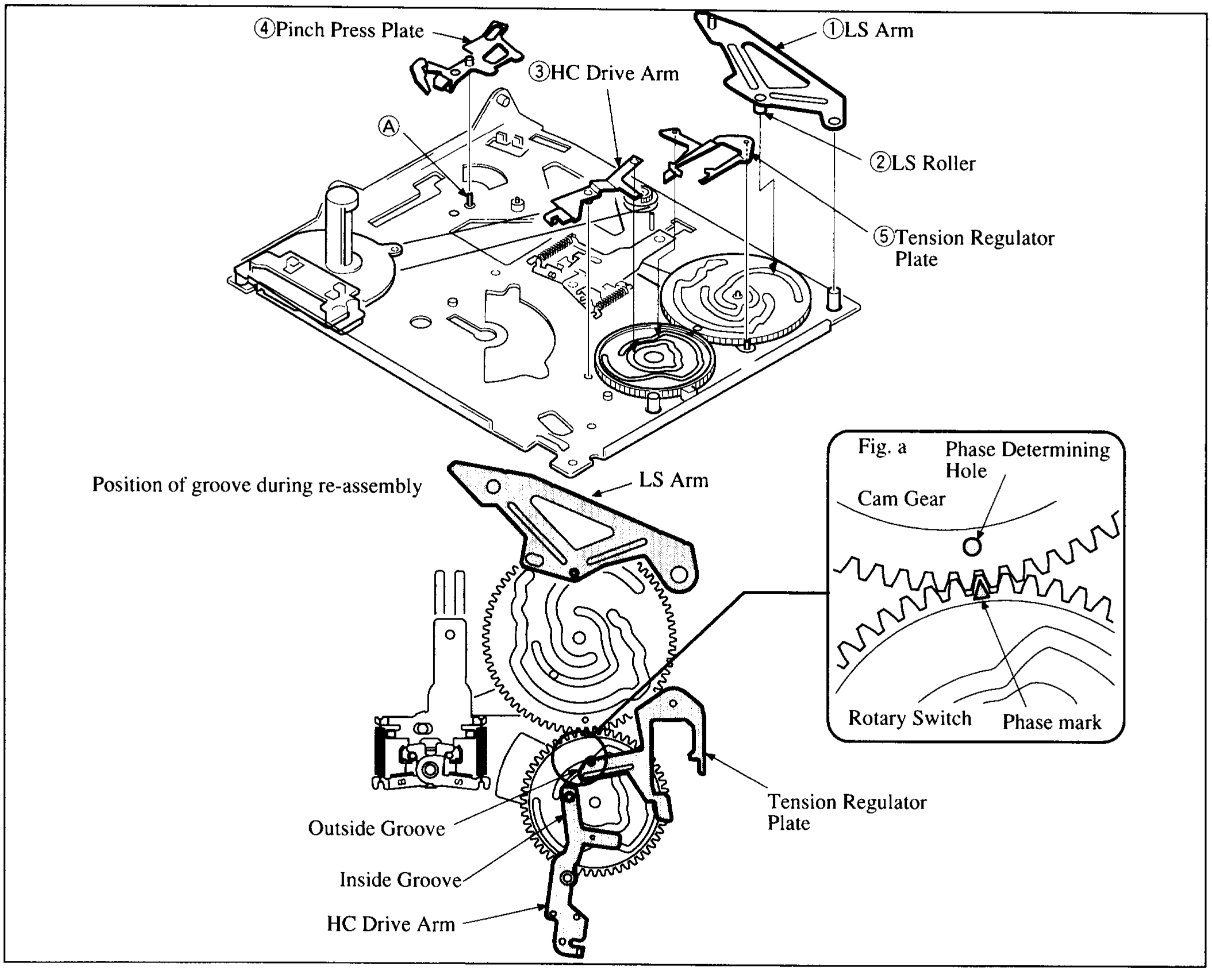

④Pinch Press Plate
③HC Drive Arm
Ⓐ
①LS Arm
②LS Roller
⑤Tension Regulator Plate
Position of groove during re-assembly
LS Arm
Fig. a
Phase Determining Hole
Cam Gear
Rotary Switch
Phase mark
Tension Regulator Plate
Outside Groove
Inside Groove
HC Drive Arm

Fig. 19

3-14. Cam Gear (Refer to Fig. 20)

1. Disassembly Procedure

1) Remove the Cassette Compartment Block Assy referring to section 1-1.
2) Remove the HC Roller Block Assy referring to section 3-1.
3) Remove the Drum Assy referring to section 3-2.
4) Remove the Drum Base Block Assy referring to section 3-3.
5) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
6) Remove the LS Chassis Block Assy referring to section 3-5.
7) Remove the DC Motor Assy referring to section 3-11.
8) Remove the Tension Regulator Plate 2, Relay Gear and M Slider Assy referring to section 3-12.
9) Remove the LS Arm and Tension Regulator Plate referring to section 3-13.
10) Remove the Cam Gear ①.

2. Precautions During Re-Assembly

1) Before attaching the Cam Gear ①, align the phase mark on the rotary switch until it agrees with the phase-determining hole Ⓐ on the mechanism chassis, and align the GL Arm's phase mark Ⓑ until it agrees with the phase-determining hole Ⓐ on the mechanism chassis. Coat the mechanism's chassis Gear Axis Ⓐ with grease SG-055G (Ref. No. J-13).
2) Attach the Cam Gear ① so that its phase hole agrees with the phase mark on the rotary switch. (Refer to Fig. a)
3) After the Cam Gear ① is attached, coat the GL Arm Axis Block of the cam gear with grease SG-055G (Ref. No. J-13).

Reference : The phase marks of the Cam Gear and Rotary Switch can also be checked from the rear side of mechanism chassis. It means that the phase can be confirmed after mechanism deck is fully re-assembled.

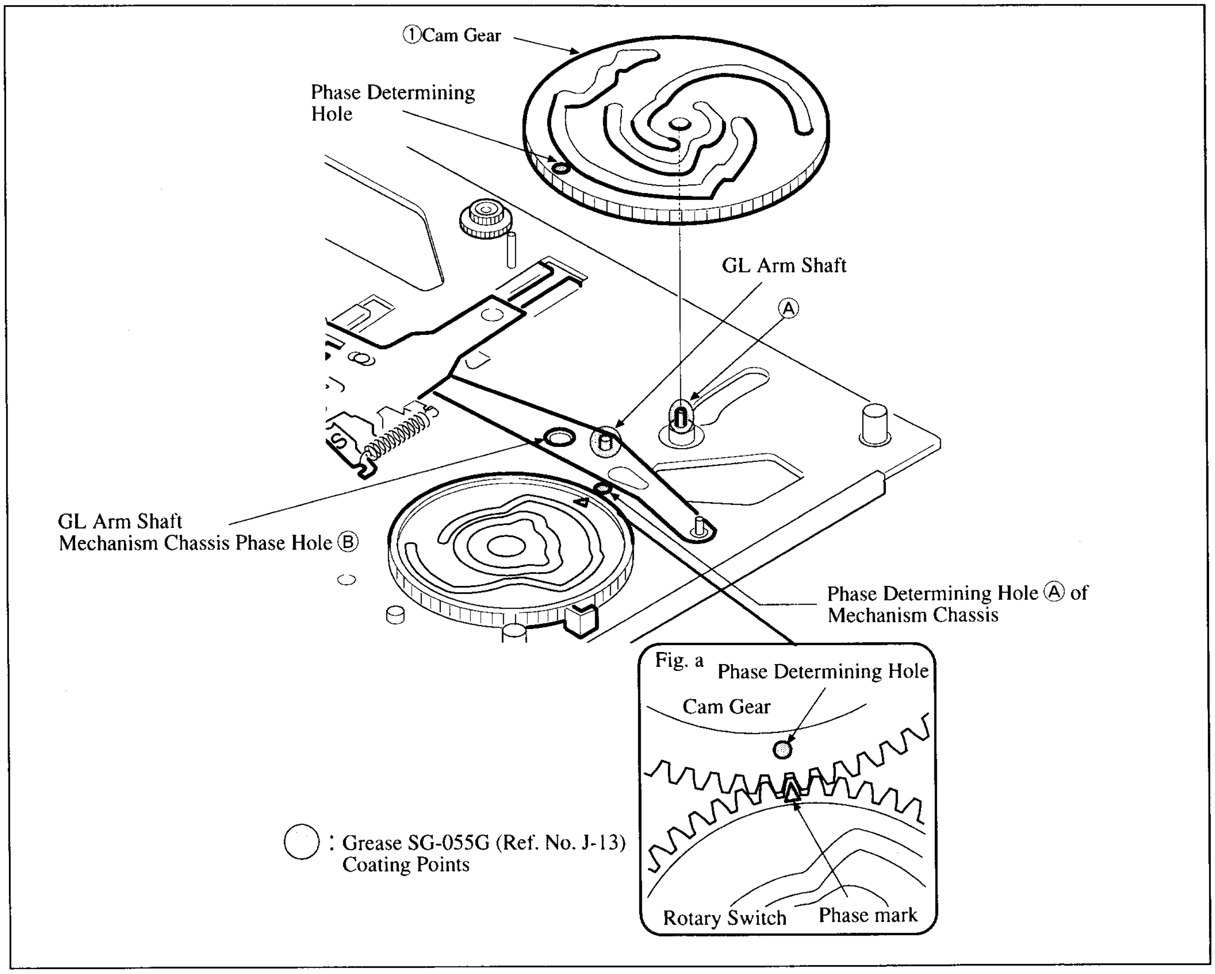

①Cam Gear
Phase Determining Hole
GL Arm Shaft
Ⓐ
GL Arm Shaft
Mechanism Chassis Phase Hole Ⓑ
Phase Determining Hole Ⓐ of Mechanism Chassis
Fig. a
Phase Determining Hole
Cam Gear
Rotary Switch
Phase mark
○ : Grease SG-055G (Ref. No. J-13) Coating Points

Fig. 20

3-15. GL Slider Assy, GL Arm (Refer to Fig. 21)

1. Disassembly Procedure

1) Remove the Cassette Compartment Block Assy referring to section 1-1.
2) Remove the HC Roller Block Assy referring to section 3-1.
3) Remove the Drum Assy referring to section 3-2.
4) Remove the Drum Base Block Assy referring to section 3-3.
5) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
6) Remove the LS Chassis Block Assy referring to section 3-5.
7) Remove the DC Motor Assy referring to section 3-11.
8) Remove the Tension Regulator Plate 2, Relay Gear and M Slider Assy referring to section 3-12.
9) Remove the LS Arm and Tension Regulator Plate referring to section 3-13.
10) Remove the Cam Gear referring to section 3-14.
11) Remove the GL Slider Assy ① by sliding it in the direction of the arrow Ⓐ.
12) Remove the GL Arm ②.

2. Precautions During Re-Assembly

1) The Tension Spring T③ is colored black and the Tension Spring S④ is colored silver.
2) Coat the position shown in Fig. a of the GL Slider Assy ① with grease SG-055G (Ref. No. J-13).
3) Coat the four points Ⓑ where GL slider is attached on the mechanism chassis with grease SG-055G (Ref. No. J-13).
4) After attaching the GL Arm ② and the GL Slider Assy, align the GL arm phase hole until it agrees with the phase-determining hole on the mechanism chassis.

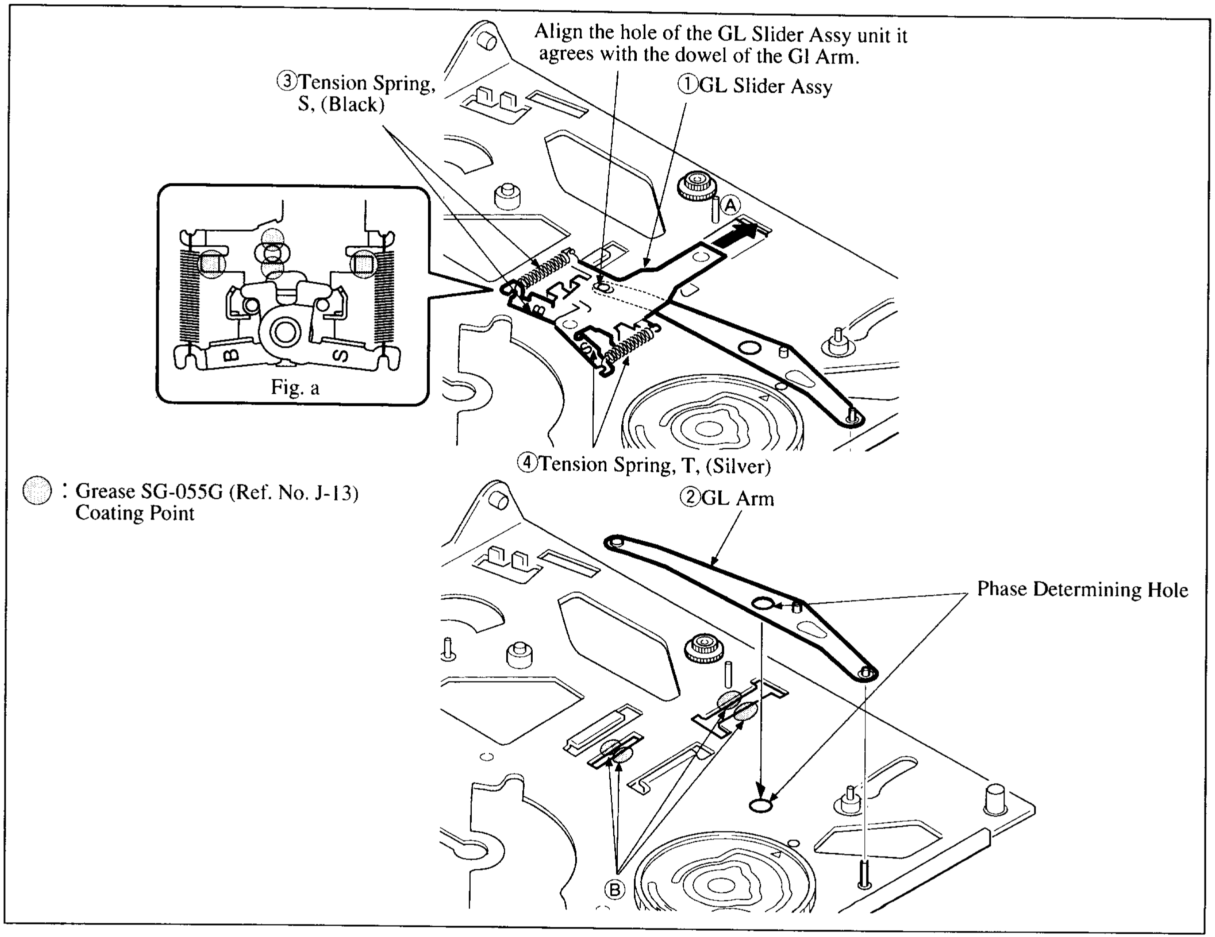

Align the hole of the GL Slider Assy unit it agrees with the dowel of the Gl Arm.
③Tension Spring, S, (Black)
①GL Slider Assy
Ⓐ
Fig. a
④Tension Spring, T, (Silver)
●: Grease SG-055G (Ref. No. J-13) Coating Point
②GL Arm
Phase Determining Hole
Ⓑ

Fig. 21

3-16. Rotary Switch (Refer to Fig. 22)

1. Disassembly Procedure

1) Remove the Cassette Compartment Block Assy referring to section 1-1.
2) Remove the HC Roller Block Assy referring to section 3-1.
3) Remove the Drum Assy referring to section 3-2.
4) Remove the Drum Base Block Assy referring to section 3-3.
5) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
6) Remove the LS Chassis Block Assy referring to section 3-5.
7) Remove the DC Motor Assy referring to section 3-11.
8) Remove the Tension Regulator Plate 2, Relay Gear and M Slider Assy referring to section 3-12.
9) Remove the LS Arm, Tension Regulator Plate, HC Drive Arm and Pinch Press Plate referring to section 3-13.
10) Remove the Cam Gear referring to section 3-14.
11) Remove soldering the portion Ⓐ on the rear of the Rotary Switch. (Pay attention at this moment that the GL Slider and GL Arm do not drop.)
12) While lifting up the portion Ⓑ about 1 mm (pay attention not to break it), hold the portion Ⓒ and turn it in the direction of the arrow Ⓓ to remove the Rotary Switch.

2. Precautions During Re-Assembly

1) Before attaching the Rotary Switch by soldering on the FP-220 board, insert the portion Ⓑ dowel into the hole on the mechanism chassis. Confirm that the three claws are engaged with the mechanism chassis.

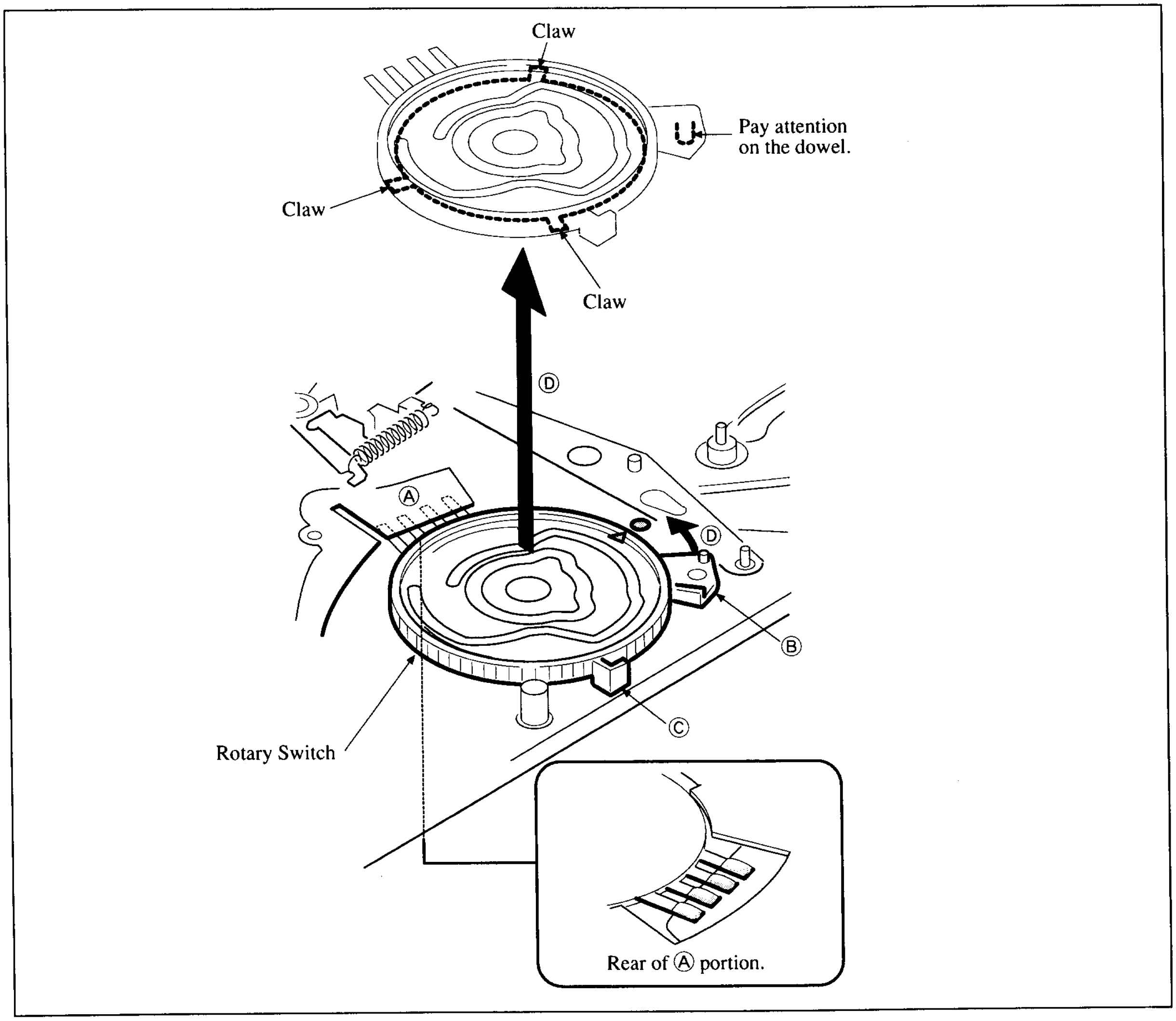


Fig. 22

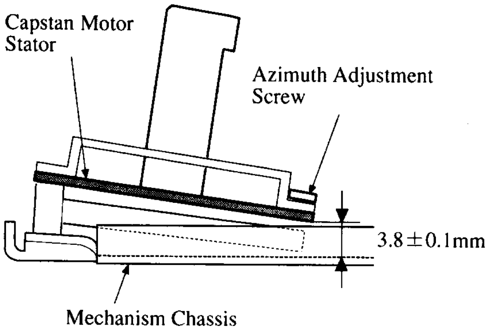
3-17. Capstan Motor (Refer to Fig. 23)

1. Disassembly Procedure

1) Remove the Cassette Compartment Block Assy referring to section 1-1.
2) Remove the HC Roller Block Assy referring to section 3-1.
3) Remove the Drum Assy referring to section 3-2.
4) Remove the Drum Base Block Assy referring to section 3-3.
5) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
6) Remove the LS Chassis Block Assy referring to section 3-5.
7) Remove the DC Motor Assy referring to section 3-11.
8) Remove the Tension Regulator Plate 2, Relay Gear and M Slider Assy referring to section 3-12.
9) Remove the Pinch Press Plate referring to section 3-13.
10) Remove the screw (M 1.4×6.7) ① and remove the Flexible Board Holder ②.
11) Remove the two screws (M 1.4×6.7) ③ and remove the Capstan Motor ④, Timing Belt ⑤ and Capstan Spacer ⑥.
12) Remove the washer ⑦ and remove the Changer Gear ⑧.

2. Precautions During Re-Assembly

1) Confirm that the timing belt is not twisted.
2) Do not touch the capstan with bare hand.
3) Lubricate the mechanism chassis's Change Gear shaft Ⓐ.
4) After attaching the Capstan Motor, perform the capstan azimuth adjustment.


Capstan Motor Stator
Azimuth Adjustment Screw
3.8±0.1mm
Mechanism Chassis

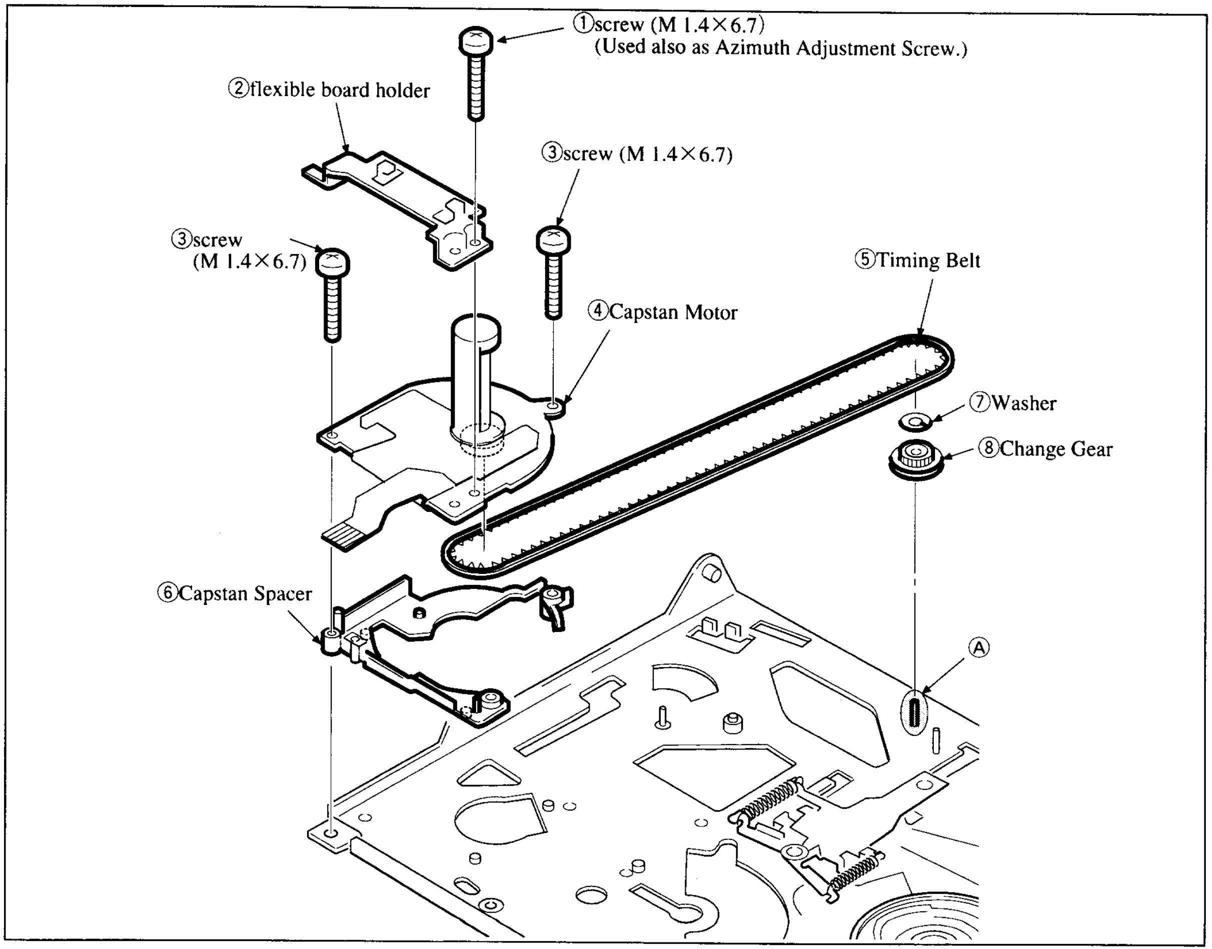

①screw (M 1.4×6.7)
(Used also as Azimuth Adjustment Screw.)
②flexible board holder
③screw (M 1.4×6.7)
③screw
(M 1.4×6.7)
⑤Timing Belt
④Capstan Motor
⑦Washer
⑧Change Gear
⑥Capstan Spacer
Ⓐ

Fig. 23

3-18. Tension Regulator Position Adjustment (Refer to Fig.24)

1. Adjustment Procedure

1) Insert a cassette Tape and run the Tape in PB mode.
2) While tape is running, confirm that the distance between the LS Chassis and TG-1 Guide's top flange is 8.3mm.
3) If not, proceed to step 4).
4) Loosen the screw ① (M 1.4×3).
5) If the TG-1 Guide is located inside the specified position, move position of the Tension Regulator Band Assy using the FWD B.T. Adjustment tool screwdriver (Ref. No. J-9) as shown in the direction of the arrow Ⓐ. If it is located outside, move it in the direction of the arrow Ⓑ.
6) Tighten the screw ① (M 1.4×3).

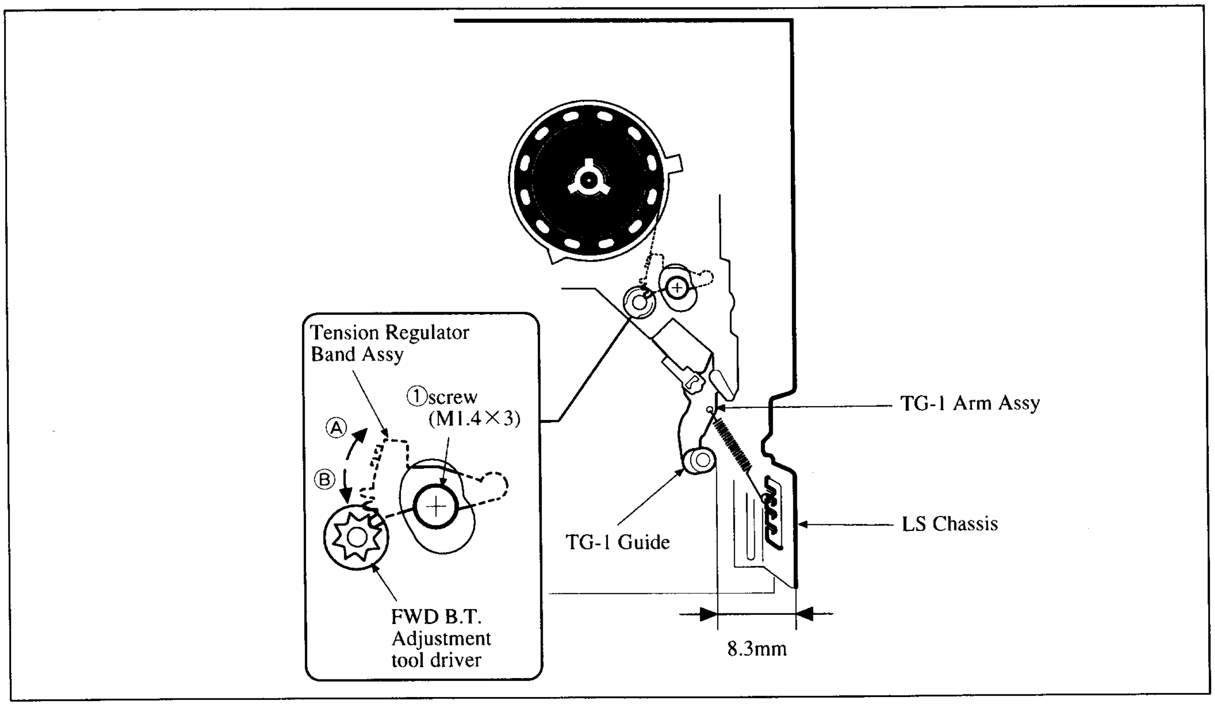

Tension Regulator Band Assy
①screw (M1.4×3)
Ⓐ
Ⓑ
FWD B.T. Adjustment tool driver
TG-1 Guide
TG-1 Arm Assy
LS Chassis
8.3mm

Fig.24

3-19. FWD Tape Hold-Back Tension Adjustment (Refer to Fig. 25)

1. Adjustment Procedure

1) Insert the torque measurement cassette to the machine.
2) Put the machine in the FWD mode. Confirm that the reading on the S side is in the range from 8.0 to 10.5 g•cm. If the reading is outside the specification range, make the following adjustments.
3) If the reading is higher than the specification, change the TG-1 Tension Spring to the side Ⓐ.
4) If the reading is lower than the specification, change the TG-1 Tension Spring to the side Ⓑ.

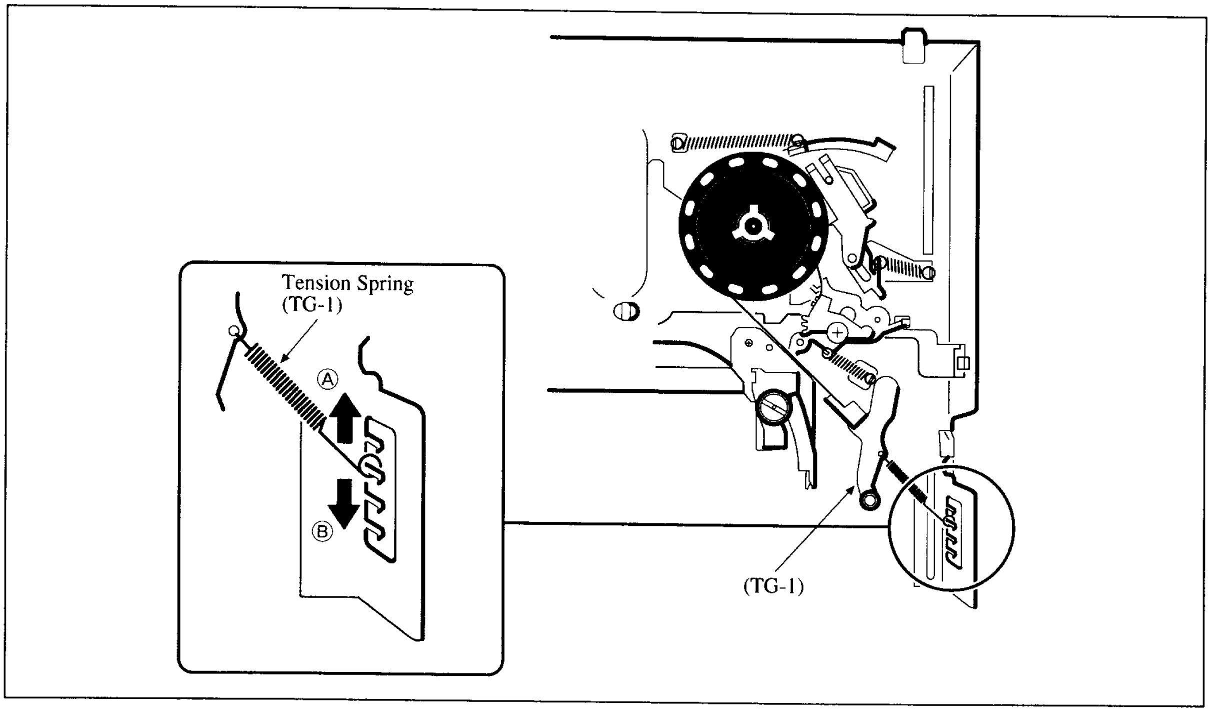


Fig. 25

4. TAPE PATH ADJUSTMENT

Purpose:	Adjusts the head linearity.
Adjustment Error:	Noise appears on top and bottom of display when playing back the tape recorded by other machines.

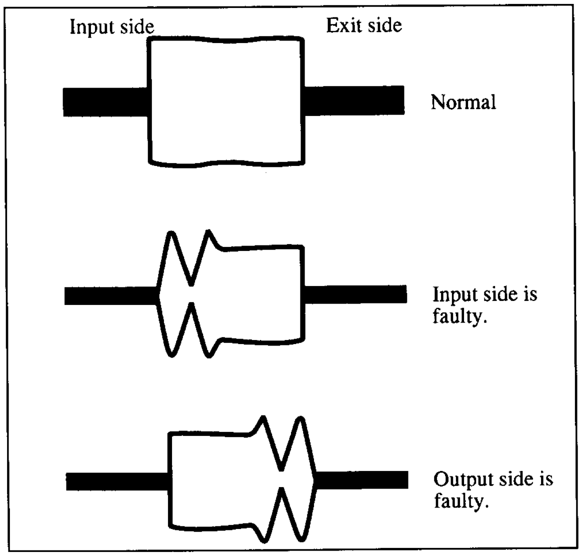


Fig. 26

4-1. Preparations for Adjustments

1) Clean the tape running surface (tape guide, drum, capstan, pinch roller).
2) Connect the adjustment remote commander to the REMOTE terminal (JACK block).
3) Establish the PATH mode using the adjustment remote commander (Track Shift mode)* to cancel auto tracking.
4) Connect an oscilloscope.
   CH1: Test connector PB RF terminal
   External trigger: Test connector PB SWP terminal
5) Playback the tracking alignment tape WR5-1NP (NTSC) or WR5-1CP (PAL) (Ref. No. J-6).
6) Check to see that RF waveform is flat at input and exit sides on oscilloscope.
   If it not flat, perform the following section 4-2 until it is flat.
7) After completing the adjustment, release the PATH mode (Track Shift mode).*.

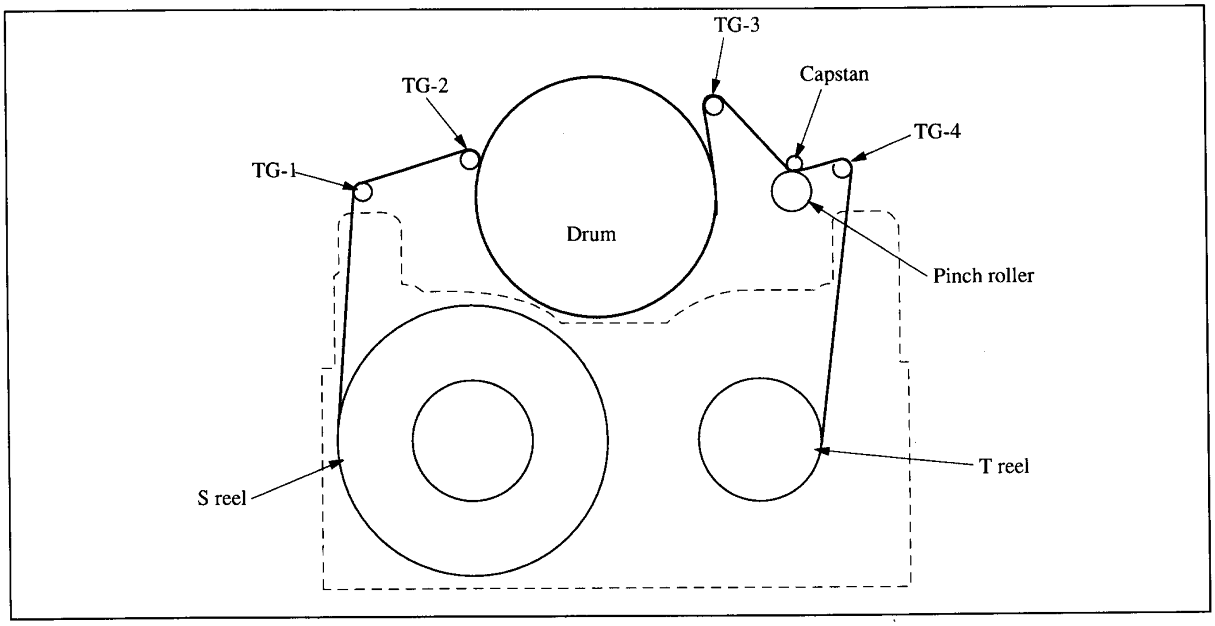


Fig. 27

* How to enter and exit the Track Shift mode. (In the case of CCD-TR420E/TR440E)

Entering the Track Shift mode

1. Select page : 6, address : 00 set data : 01 and press the PAUSE button.
2. Select page : 7, address : 01 set data : 03 and press the PAUSE button.

Exitting the Track Shift mode

1. Select page : 7, address : 01 set data : 00 and press the PAUSE button.
2. Select page : 6, address : 00 set data : 00 and press the PAUSE button.

4-2. Tracking Adjustment (Refer to Fig. 28.)

1) Playback the tracking alignment tape WR5-1NP (NTSC) or WR5-1CP (PAL) (Ref. No. J-6).
2) Adjust the tape guide No. 2 until the input side waveform becomes flat.
3) Adjust the tape guide No. 3 until the input side waveform becomes flat.

☆ Zenith adjustment screws for the TG-2 and TG-3 do not need to be adjusted.

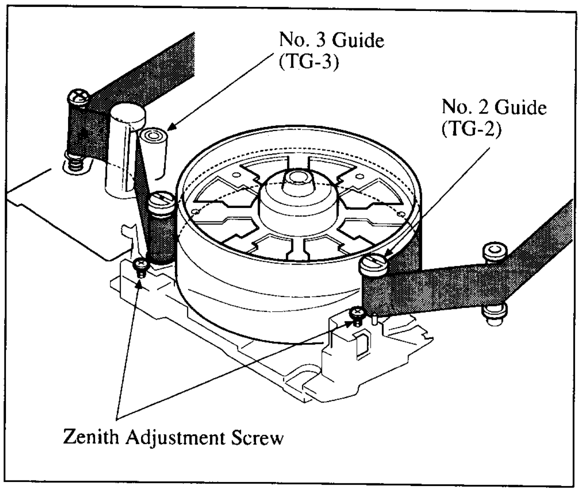


Fig. 28

4-3. No. 4 Guide (TG-4) Adjustment (Refer to Fig. 29.)

1) Playback a tape in REV mode.
2) Confirm that tape slack does not occur in between the guide No. 3 (TG-3) ① and Capstan ②. If tape slack is found, turn the height adjustment screw ④ of the Guide No. 4 (TG-4) ③ until tape slack is removed.
3) Playback a tape in FWD mode. Confirm that tape slack does not occur in between the guide No. 4 (TG-4) ③ and capstan ②. (Specification = 0.5 mm or less) If tape slack of more than 0.5 mm is found, turn the TG-4 nut ④ until the slack is 0.5 mm or less. Playback tape in REV mode and confirm that tape slack in between the guide No. 3 (TG-3) ① and capstan ② is 0.3 mm or less, the adjustment is complete.

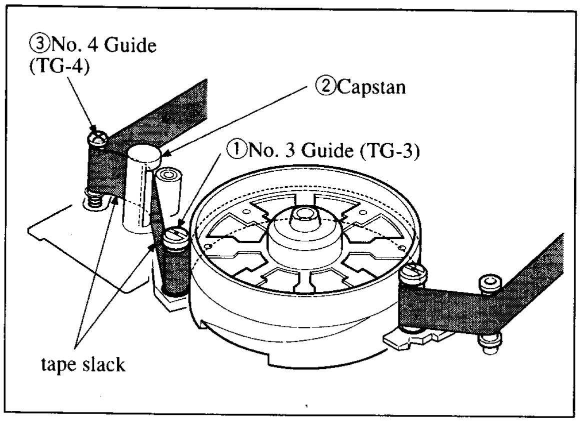


Fig. 29

4-4. CUE, REV Waveforms Check (Refer to Fig. 30.)

1) Playback the tracking alignment tape in REV mode.
   Confirm that pitches between the peaks of the waveform are equally spaced for 5 seconds or longer.
   The pitches are not equally spaced, perform sections "4-2. Tracking Adjustment" and section "4-3. No. 4 Guide Adjustment".
2) Playback the tracking alignment tape in CUE mode.
   Confirm that pitches between the peaks of the waveform are equally spaced for 5 seconds or longer.
   The pitches are not equally spaced, perform section "4-2. Tracking Adjustment".

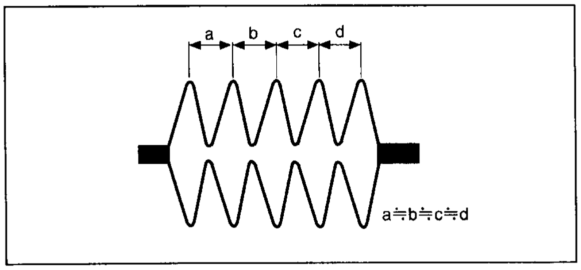


Fig. 30

4-5. Checks After Adjustments

4-5-1. Tracking Check

1) Confirm that amplitude of the RF waveform decreases to about 3/4 when the machine enters the PATH mode. (Refer to Fig. 31)
2) Confirm that the minimum amplitude (EMIN) of the RF waveform is 65 % or more of the maximum amplitude (EMAX). (Refer to Fig. 32)
3) Confirm that the RF waveform does not have too much fluctuation. (Refer to Fig. 33)

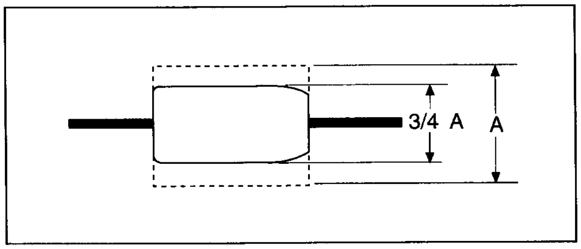
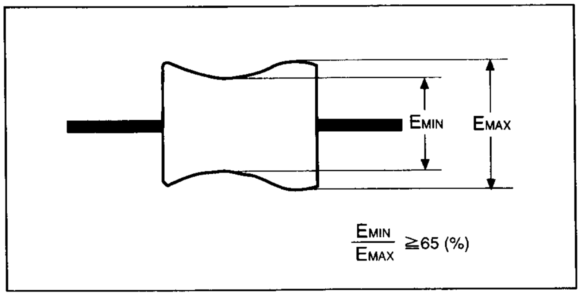


Fig. 31



$\frac{E_{MIN}}{E_{MAX}} \geqq 65\ (\%)$

Fig. 32

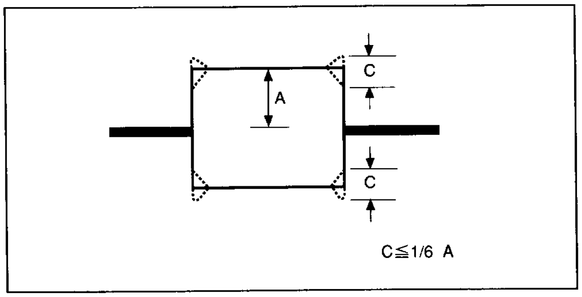


Fig. 33

4-5-2. Waveform Build-up Check (Refer to Fig. 34.)

1) Playback the tracking alignment tape.
2) Turn OFF the Track Shift mode.
3) Eject the tape once, insert and load the tape.
4) Start playing back the tape and confirm that the RF waveform builds up in three seconds with flat envelope. Confirm at this time that tape slack does not occur near pinch roller.
5) Playback the tape in CUE/REV and FF/REW modes respectively. Confirm that the RF waveform builds up in three seconds with flat envelope. Confirm at this time that tape slack does not occur near pinch roller.
6) Repeat the check items 3) to 5) again.

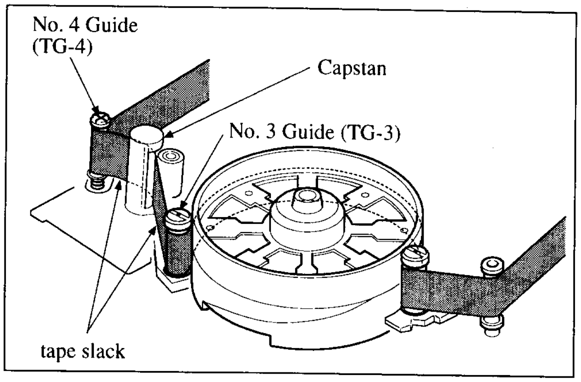


Fig. 34

4-5-3. Tape Pass Check (Refer to Fig. 35.)

1) Insert a thin video tape such as P6-120MP (NTSC) or P5-120MP (PAL). Playback the thin tape. Confirm that there is no clearance or curl of 0.3 mm or more at the following points: Upper flange of guide No. 2, upper flange of guide No. 3, upper and lower flanges of guide No. 4.
2) Confirm that there is no clearance or curl of 0.3 mm or more at each tape guide when the FF button is pressed from the playback mode to enter the CUE mode, and when the REW button is pressed from the playback mode to enter the REV mode.

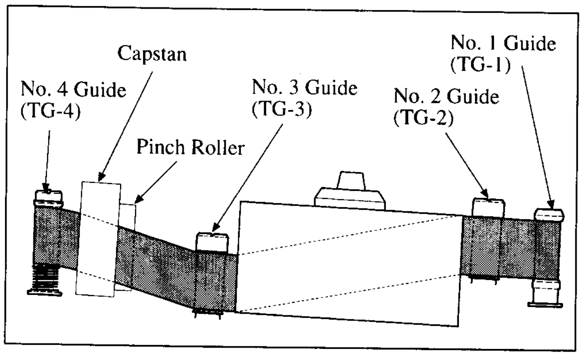
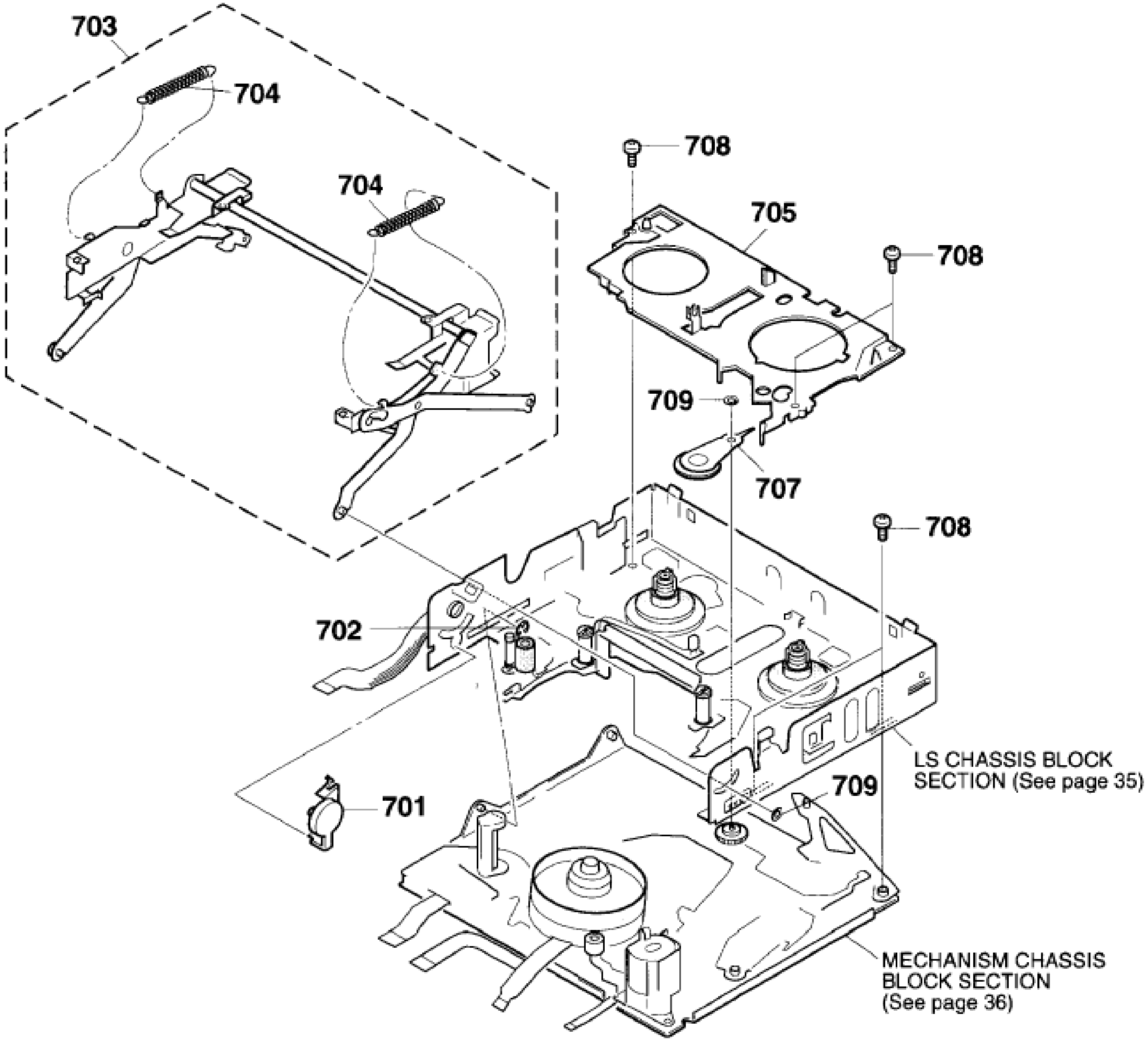
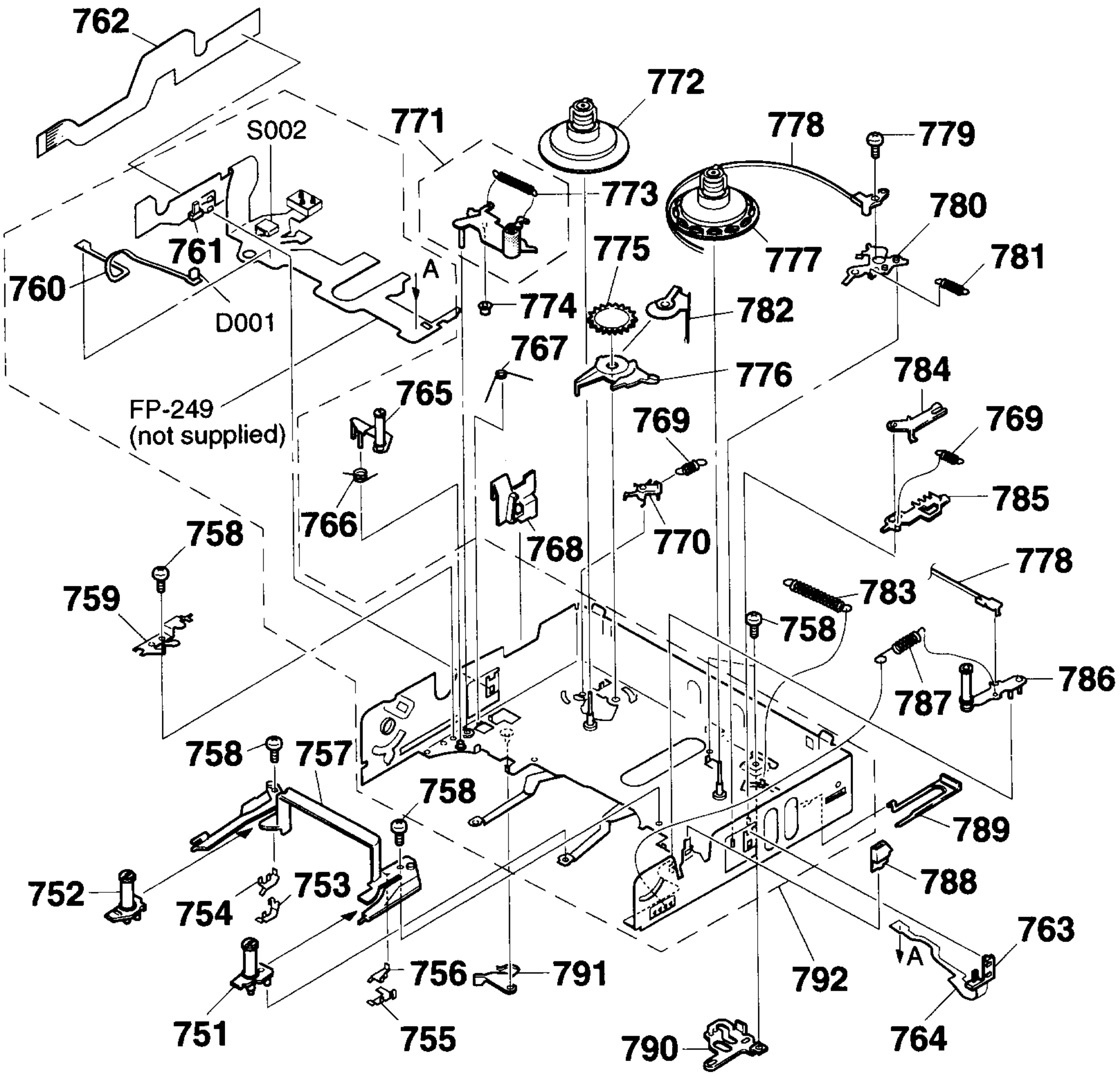


Fig. 35

5-1. Cassette Compartment Block Section


703
704
704
708
705
708
709
707
708
702
701
709
LS CHASSIS BLOCK SECTION (See page 35)
MECHANISM CHASSIS BLOCK SECTION (See page 36)

5-2. LS Chassis Block Section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771
778
779
S002
773
780
761
775
777
781
760
D001
774
782
767
776
784
FP-249
(not supplied)
765
769
769
A
766
785
758
768
770
778
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783
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787
758
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A
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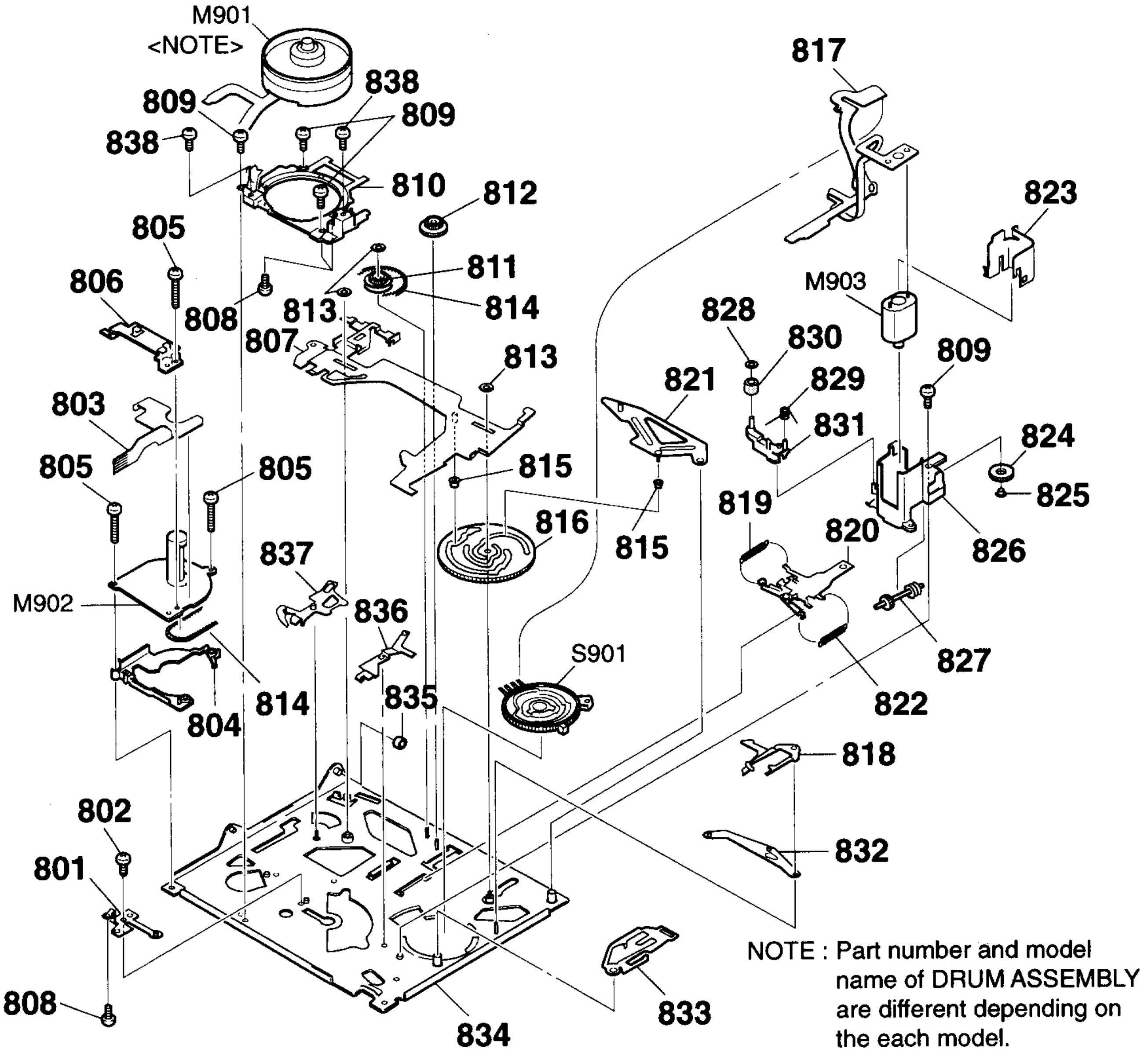
790

5-3. Mechanism Chassis Block Section


M901
<NOTE>
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830
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821
829
831
803
805
805
815
824
825
819
816
815
820
826
837
M902
836
S901
827
814
804
835
822
818
802
832
801
833
808
834

NOTE : Part number and model name of DRUM ASSEMBLY are different depending on the each model.